

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

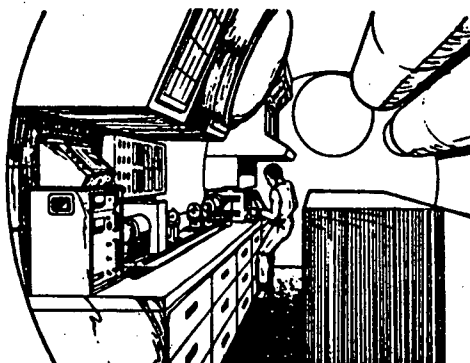
FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

JUNE 1, 1972

PRL 189



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FINAL REPORT

CONTRACT NASW-2192

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

PREPARED FOR:

**BIOENGINEERING DIVISION, OFFICE OF LIFE SCIENCES
HEADQUARTERS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

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FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

EXPLANATION OF
TASK-SKILLS DATA SHEETS

APPENDIX H

FLIGHT EXPERIMENT TASK-SKILL DATA SHEETS

EXPLANATION OF TASK-SKILL DATA SHEETS

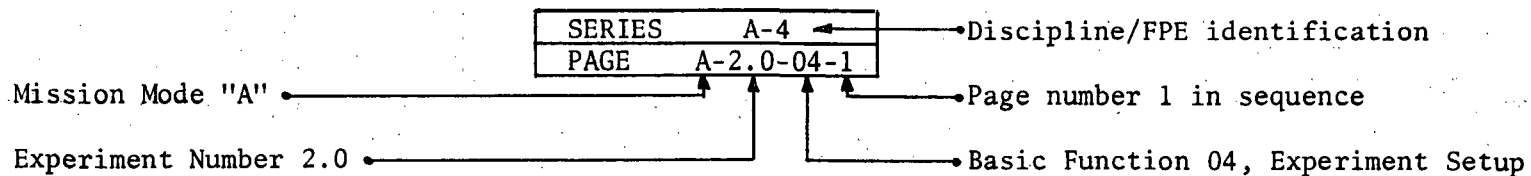
The data sheets in this volume contain the results of the task-analysis of Research and Application experiments encompassed by this study. Each data sheet provides the following information:

- A narrative task statement
 - Crew function code numbers
 - Operating environment code numbers
 - Task Dependency Reference code numbers
 - Task-Skill titles
 - Task-Skill code numbers
- } For each task statement

The data sheets are presented in alphanumeric sequence according to the following scheme:

- By discipline ("A" for Astronomy, "C/N" for Comm/Nav, etc.).
- By functional program element (FPE) within each discipline (A-4, Intermediate Size UV Telescopes).
- By experiment number within each FPE (2.0, Wide Field UV Telescopes).
- By basic function within each experiment (04 - Experiment Setup).
- In task-statement numerical order, within basic functions.

The upper right-hand corner of each data sheet provides page coding which reflects this alphanumeric scheme.



Each of these items is identified more completely in the data sheet headings.

Explanation of data in columns:

Crew Task Statement - This is a statement of crew activity which will be required of Research and Application crewmen on-orbit. These statements have been extracted from the NASA "Blue Book" descriptions of each experiment, experiment group, and FPE. Crew Task Statement numbers have been assigned in the order of task identification and do not imply any particular task sequence.

Crew Function No. - This is a 2-digit code-number representing crew functions required to accomplish the task statement. Crew function titles and definitions are included in Appendix B.

Operating Environment No. - This is a 2-digit code number representing the operating environment in which the crew function is to be performed. Operating environment titles and definitions are included in Table 2-2 of the report.

Dependency No. - This is an alphanumeric coding system used to identify the equipment, areas of investigation, and environments upon which successful task performance depends for each crew function and operation environment. These are the primary expected equipment and non-equipment interfaces of the crewmen. The Task Dependency Reference List in Appendix D gives the task dependency title for each code number.

Task-Skill - This is a title, with accompanying code number, which represents the type of skill required to perform the associated crew function. The task-skill title is a combination of the primary task dependency and the crew function. The method of development and use of task-skill titles is described in Section 2.0 of the report. A numerical listing of task-skills is included in Appendix E.

The following FPEs are included in this appendix, for the Mission Modes indicated:

A-4	Intermediate Size UV Telescopes (Mode B)
C/N-1	Communication/Navigation Research Laboratory (Modes A and B)
ES-1	Earth Observations Facility (Modes A and B)
LS-1	Medical Research Facility (Mode A)
LS-6	Life Support and Protective Systems (Mode A)
MS-1	Materials Science and Manufacturing In Space (Mode A)
P-1	Space Physics Research Lab (Mode B)
P-4	Physics and Chemistry Lab (Mode A)
T-5	Teleoperations (Mode A)

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PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Astronomy

FUNCTIONAL PROGRAM ELEMENT (FPE):

A-4 Intermediate Size UV Telescopes

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

1.0 Narrow Field UV Telescope

2.0 Wide Field UV Telescope

DISCIPLINE: Astronomy

FUNCTIONAL PROGRAM ELEMENT (FPE):

A-4 Intermediate Size UV Telescopes

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Narrow Field UV Telescope

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-04-1
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Visually inspect telescope	03	01	2.A.01	-1	Telescope Inspector	0001
2	Remove, fold, and stow protective covering	26	01	4.D.01	-1	Telescope Cover Remover	0002
3	Remove protective caps on optics	26	01	4.D.01	-2	Telescope Cover Remover	0002
4	Release launch restraints	26	01	4.D.02	-1	Launch Restraint Remover	0003
5	Set up work space in console area	18	01	4.D.03	-1	Workspace Equipment Unstower	1191
6	Functionally check console systems	15	01	2.B.01	-1	Astronomy C/D Console Self-Test Control Actuator	0252
		01	01	2.B.01	-1	Astronomy C/D Console Self-Test Display Monitor	0253
7	Activate and checkout drives	03	01	2.A.01	-1	Telescope Drive Inspector	0254
		03	01	2.E.05	-1	" " "	0254
		03	01	2.E.05	-2	" " "	0254
		03	01	2.E.05	-3	" " "	0254
		03	01	2.E.05	-4	" " "	0254
		03	01	2.E.05	-5	" " "	0254
		03	01	2.E.05	-6	" " "	0254
		15	01	2.B.01	-6	Telescope Drive Control Actuator	0256
		16	01	2.B.01	-5	Telescope Drive Control Deactuator	0257

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-2	
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes			
EXPERIMENT:						MISSION MODE: A	
1.0 Narrow Field UV Telescope						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	03	01	2.E.05	-7	Telescope Drive Inspector	0254
		03	01	2.E.05	-8	" " "	0254
		03	01	2.E.05	-9	" " "	0254
		03	01	2.E.05	-10	" " "	0254
		14	01	2.A.01	-1	Telescope Drive Tester	0255
		14	01	2.E.05	-1	" " "	0255
		14	01	2.E.05	-2	" " "	0255
		14	01	2.E.05	-3	" " "	0255
		14	01	2.E.05	-4	" " "	0255
		14	01	2.E.05	-5	" " "	0255
		14	01	2.E.05	-6	" " "	0255
		14	01	2.E.05	-7	" " "	0255
		14	01	2.E.05	-8	" " "	0255
		14	01	2.E.05	-9	" " "	0255
		14	01	2.E.05	-10	" " "	0255
		14	01	2.B.01		" " "	0255
		15	01	2.B.01	-5	Telescope Drive Control Actuator	0256
		15	01	2.A.01	-1	" " " "	0256
		15	01	2.E.01	-1	" " " "	0256
		15	01	2.E.01	-2	" " " "	0256
		15	01	2.E.01	-3	" " " "	0256
		15	01	2.E.01	-4	" " " "	0256
		15	01	2.E.01	-5	" " " "	0256
		15	01	2.E.01	-6	" " " "	0256
		15	01	2.E.01	-7	" " " "	0256
		15	01	2.E.01	-8	" " " "	0256
		15	01	2.E.01	-9	" " " "	0256
		15	01	2.E.01	-10	" " " "	0256
		16	01	2.A.01	-1	Telescope Drive Control Deactuator	0257
		16	01	2.B.01	-6	" " " "	0257

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-1.0-04-3
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	16	01	2.E.01	-1	Telescope Drive Control Deactuator	0257
		16	01	2.E.01	-2	" " " "	0257
		16	01	2.E.01	-3	" " " "	0257
		16	01	2.E.01	-4	" " " "	0257
		16	01	2.E.01	-5	" " " "	0257
		16	01	2.E.01	-6	" " " "	0257
		16	01	2.E.01	-7	" " " "	0257
		16	01	2.E.01	-8	" " " "	0257
		16	01	2.E.01	-9	" " " "	0257
		16	01	2.E.01	-10	" " " "	0257
8	Load film cassettes into cameras	27	01	2.A.17	-1	Film Cartridge Installer	0046
		27	01	2.A.17	-2	" " " "	0046
		27	01	4.D.04	-1	" " " "	0046
		27	01	4.D.04	-2	" " " "	0046
		27	01	4.D.04	-3	" " " "	0046
10	Check out field camera optics focusing	14	01	2.A.17	-1	Camera Focusing Tester	0258
		01	01	2.A.17	-1	" " " "	0258
11	Check out focusing of spectrograph section	14	01	2.A.17	-2	Camera Focusing Tester	0258
		14	01	2.A.28		Spectrograph Focusing Tester	0259
		14	01	2.A.14	-1	" " " "	0259
		14	01	2.A.14	-2	" " " "	0259
		01	01	2.A.17	-2	Camera Focusing Tester	0258
		01	01	2.A.28		Spectrograph Focusing Tester	0259

FLIGHT EXPERIMENT TASK-SKILLS							SERIES A-4
							PAGE A-1.0-04-4
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	(Continued)	01	01	2.A.14	-1	Spectrograph Focusing Tester	0259
		01	01	2.A.14	-2	" " "	0259
12	Verify stowage of loose parts in instrument chamber	03	01	1.A.01	-12	Telescope Chamber Inspector	0260
13	Seal instrument chamber	27	01	1.A.01	-13	Telescope Chamber Inside Hatch Closer	0261
		01	01	1.A.02	-7	Telescope Chamber Status Monitor	0262
14	Depressurize telescope chamber	15	01	1.A.02	-8	Telescope Chamber Depressurization Actuator	0263
		01	01	1.A.02	-8	Telescope Chamber Status Monitor	0262
15	Monitor temperature control system until stabilized	01	01	1.A.02	-9	Telescope Chamber Status Monitor	0262
16	Open hatch cover	01	01	1.A.02	-7	Telescope Chamber Status Monitor	0262
		01	01	1.A.02	-8	" " " "	0262
		26	01	1.A.01	-13	Telescope Chamber Inside Hatch Closer	0261
		15	01	1.A.02	-10	Telescope Chamber Outside Hatch Control Actuator	0316
		15	01	1.A.02	-8	Telescope Chamber Depressurization Actuator	0263

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-5	
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes			
EXPERIMENT:						MISSION MODE: A	
1.0 Narrow Field UV Telescope						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	Deploy telescope	01	01	2.B.01	-6	Telescope Deployment Status Monitor	0317
		15	01	2.B.01	-6	Telescope Deployment Control Actuator	0318
18	Turn on main power to instrument detectors	01	01	2.B.02	-2	Instrument Power Monitor	0139
		15	01	2.B.02	-2	Instrument Power Actuator	0035
19	Activate data handling equipment	15	01	2.B.02	-2	Instrument Power Actuator	0035
		01	01	2.B.02	-2	Instrument Power Monitor	0139

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-6	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes				
EXPERIMENT:						MISSION MODE: A	
1.0 Narrow Field UV Telescope						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
20	Verify instrument is in thermal equilibrium	01	01	2.B.02	-5	Telescope Status Monitor	0264
		01	01	1.A.02	-9	Telescope Chamber Status Monitor	0262
21	Insert experiment conditions	13	01	2.A.01	-1	Telescope Mode Selector	0265
		13	01	2.A.03		Spectrometer Mode Selector	0267
		13	01	2.A.04	-1	TV Mode Selector	0268
		13	01	2.A.14	-1	Grating Mode Selector	0269
		13	01	2.A.14	-2	" " "	0269
		13	01	2.A.15	-1	Band Filter Mode Selector	0270
		13	01	2.A.15	-2	" " " "	0270
		13	01	2.A.17	-1	Camera Mode Selector	0271
		13	01	2.A.17	-2	" " "	0271
		13	01	2.B.01	-1	Telescope Mode Selector	0265
		13	01	2.B.01	-4	Spectrometer Mode Selector	0267
		13	01	2.B.01	-5	Telescope Mode Selector	0265
		13	01	2.E.02	-1	Star Tracker Mode Selector	0272
		13	01	2.E.02	-2	" " " "	0272
		13	01	2.E.02	-3	" " " "	0272
		13	01	3.B.01	-1	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-2	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-3	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-4	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-5	Stellar Ultraviolet Observation Mode Selector	0273

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-7	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes				
EXPERIMENT:						MISSION MODE: A	
1.0 Narrow Field UV Telescope						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
21	(Continued)	13	01	3.B.01	-6	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	4.B.01	-1	Computer Mode Selector	0274
		13	01	4.B.02	-1	Amplifier Mode Selector	0275
		13	01	4.B.02	-2	" " "	0275
		13	01	4.B.03		Phase Shifter Mode Selector	0276
		15	01	2.A.01	-1	Telescope Mode Control Actuator	0266
		15	01	2.A.03		Spectrometer Mode Control Actuator	0277
		15	01	2.A.04	-1	TV Mode Control Actuator	0278
		15	01	2.A.14	-1	Grating Mode Control Actuator	0279
		15	01	2.A.14	-2	" " " "	0279
		15	01	2.A.15	-1	Band Filter Mode Control Actuator	0280
		15	01	2.A.15	-2	" " " " "	0280
		15	01	2.A.17	-1	Camera Mode Control Actuator	0281
		15	01	2.A.17	-2	" " " "	0281
		15	01	2.B.01	-1	Telescope Mode Control Actuator	0266
		15	01	2.B.01	-4	Spectrometer Mode Control Actuator	0277
		15	01	2.B.01	-5	Telescope Mode Control Actuator	0266
		15	01	2.E.02	-1	Star Tracker Mode Control Actuator	0282
		15	01	2.E.02	-2	" " " " "	0282
		15	01	2.E.02	-3	" " " " "	0282
		15	01	3.B.01	-1	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-2	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-3	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-4	Stellar Ultraviolet Observation Mode Control Actuator	0283

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-8	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescope				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
21	(Continued)	15	01	3.B.01	-5	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-6	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	4.B.01	-1	Computer Mode Control Actuator	0284
		15	01	4.B.02	-1	Amplifier Mode Control Actuator	0285
		15	01	4.B.02	-2	" " " "	0285
		15	01	4.B.03		Phase Shifter Mode Control Actuator	0286
27	Prepare film cassettes	03	01	4.D.04	-1	Film Cartridge Inspector	0287
		27	01	4.D.04	-1	Film Cartridge Installer	0046
		26	01	2.E.06		" " "	0046
		18	01	4.D.04	-1	Film Cartridge Unstower	0288
		18	01	1.A.03	-1	" " "	0288
28	Activate airlock and mechanical film-changing system	01	01	1.A.02	-1	Airlock Status Monitor	0009
		01	01	1.A.02	-2	" " "	0009
		15	01	2.E.06		Film Changing System Actuator	0289
		15	01	2.B.01	-7	" " " "	0289
		15	01	1.A.02	-2	Airlock Pressurization Actuator	0133
		01	01	2.B.01	-7	Film Changing System Monitor	0290
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
35	Unlock/unstow equipment after launch	18	01	1.A.03	-1	Spectrometer Unstower	0007
		26	01	2.A.01	-1	Launch Restraint Remover	0003
		18	01	2.E.02	-1	Star Tracker Unstower	0291

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	A-4	
							PAGE	A-1.0-04-9	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes						
EXPERIMENT: 1.0 Narrow Field UV Telescope							MISSION MODE: A		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
35	(Continued)	18	01	2.E.02	-2	Star Tracker Unstower	0291		
		18	01	2.A.04		TV Camera Unstower	0054		
		18	01	2.A.17		Camera Unstower	0292		
		18	01	2.A.03	-2	Spectrometer Unstower	0007		
		18	01	2.A.03	-3	" "	0007		
		26	01	4.D.02	-1	Launch Restraint Remover	0003		
		18	01	1.A.03	-1	Star Tracker Unstower	0291		
		18	01	1.A.03	-1	TV Camera Unstower	0054		
		18	01	1.A.03	-1	Camera Unstower	0292		
		18	01	4.D.07	-1	" "	0292		
		18	01	2.E.02	-3	Star Tracker Unstower	0291		
		36	Inspect equipment for deficiencies	03	01	2.A.01	-1	Telescope Inspector	0001
03	01			2.E.02	-1	Star Tracker Inspector	0293		
03	01			2.E.02	-2	" " "	0293		
03	01			2.A.04		TV Camera Inspector	0079		
03	01			2.A.17		Camera Inspector	0294		
03	01			2.A.03	-2	Spectrometer Assembly Inspector	0078		
03	01			2.A.03	-3	" " "	0078		
03	01			2.A.14	-1	Grating Inspector	0295		
03	01			2.A.14	-2	" "	0295		
03	01			2.A.15	-2	Band Filter Inspector	0296		
03	01			4.D.07	-1	Camera Inspector	0294		
03	01			2.E.02	-3	Star Tracker Inspector	0293		
37	Align equipment for operation	09	01	2.A.01	-1	Telescope Aligner	0297		
		09	01	3.B.01		" "	0297		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4
						PAGE A-1.0-04-10
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes			
EXPERIMENT: 1.0 Narrow Field UV Telescope					MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
37	(Continued)	09	01	2.E.02	-1	Star Tracker Aligner 0298
		09	01	3.B.01		" " " 0298
		09	01	4.D.07		Camera Aligner 0299
		09	01	3.B.01		" " " 0299
		09	01	4.D.04	-3	" " " 0299
		09	01	3.B.01		" " " 0299
		09	01	2.A.03	-2	Spectrometer Aligner 0300
		09	01	3.B.01		" " " 0300
		09	01	2.A.14	-1	Grating Aligner 0301
		09	01	3.B		" " " 0301
		09	01	2.A.15	-2	Band Filter Aligner 0302
		09	01	2.E.02	-3	Star Tracker Aligner 0298
		09	01	2.B.01	-1	Telescope Aligner 0297
		09	01	2.B.01	-4	Spectrometer Aligner 0300
		09	01	2.B.01	-5	Telescope Aligner 0297
		09	01	2.B.01	-1	" " " 0297
38	Prepare equipment for deployment	18	01	2.A.01	-1	Telescope Unstower 0303
		26	01	4.D.01	-1	Telescope Cover Remover 0002
		26	01	4.D.01	-2	Telescope Cap Remover 0308
		26	01	4.D.01	-5	Star Tracker Cap Remover 0304
		18	01	2.E.02	-1	Star Tracker Unstower 0291
		27	01	2.E.02	-1	Star Tracker Installer 0305
		18	01	2.E.02	-2	Star Tracker Unstower 0291
		27	01	2.E.02	-2	Star Tracker Installer 0305
		27	01	2.A.01	-1	" " " 0305
		18	01	2.A.04		TV Camera Unstower 0054
		27	01	2.A.04		TV Camera Installer 0306

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-04-11	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	27	01	2.A.01	-1	TV Camera Installer	0306
		18	01	4.D.07	-2	Camera Unstower	0292
		26	01	4.D.01	-7	Camera Cap Remover	0307
		27	01	4.D.0m	-2	Camera Installer	0039
		18	01	2.A.03	-2	Spectrometer Unstower	0007
		18	01	2.A.03	-3	" "	0007
		27	01	2.A.03	-2	Spectrometer Installer	0006
		27	01	2.E.02	-3	Star Tracker Installer	0305
		27	01	2.A.01	-1	" " "	0305
		18	01	2.E.02	-3	Star Tracker Unstower	0291
		26	01	4.D.01	-6	TV Camera Cap Remover	0309
		27	01	2.A.01	-1	Camera Installer	0039
		27	01	2.A.03	-3	Spectrometer Installer	0006
		27	01	2.A.01	-1	" "	0006
42	Change system configurations:						
42	.1 Change spectrometer gratings	26	01	2.A.03	-2	Grating Remover	0310
		26	01	2.A.14	-1	" "	0310
		26	01	2.A.14	-2	" "	0310
		26	01	2.A.03	-3	" "	0310
		27	01	2.A.03	-2	Grating Installer	0311
		27	01	2.A.14	-1	" "	0311
		27	01	2.A.14	-2	" "	0311
		27	01	2.A.03	-3	" "	0311
		27	01	3.B.01		" "	0311

FLIGHT EXPERIMENT TASK-SKILLS							SERIES A-4
							PAGE A-1.0-04-12
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 - Intermediate Size IIV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
42	.2 Change band filters	26	01	2.A.17	-1	Band Filter Remover	0312
		26	01	2.A.17	-2	" " "	0312
		26	01	4.D.07	-1	" " "	0312
		26	01	2.A.15	-1	" " "	0312
		26	01	2.A.15	-2	" " "	0312
		27	01	2.A.17	-1	Band Filter Installer	0313
		27	01	2.A.17	-2	" " "	0313
		27	01	4.D.07		" " "	0313
		27	01	2.A.15	-1	" " "	0313
		27	01	2.A.15	-2	" " "	0313
		27	01	3.B.01		" " "	0313
		44	Change cameras in field photography section	26	01	2.A.17	-1
26	01			2.A.01	-1	" "	0314
27	01			2.A.17	-1	Camera Installer	0039
27	01			2.A.01	-1	" "	0039
46	Replace spectrograph	26	01	2.A.01	-1	Spectrograph Remover	2040
		26	01	2.A.28		" "	2040
		27	01	2.A.28		Spectrograph Installer	2041
		27	01	2.A.01	-1	" "	2041

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-05-1
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	Deactivate data handling equipment	16	01	4.B.01	-1	Computer Control Deactuator	0319
		16	01	2.B.01	-1	Telescope Control Deactuator	0320
25	Turn off main power to detectors	16	01	2.B.01	-3	Telescope Control Deactuator	0320
31	Package and store materials	27	01	4.D.02	-1	Launch Restraint Installer	0172
		27	01	2.A.01	-1	" " "	0172
		17	01	2.E.02	-1	Star Tracker Stower	0321
		17	01	2.E.02	-2	" " "	0321
		17	01	1.A.03	-1	" " "	0321
		17	01	2.A.03	-2	Spectrometer Stower	0063
		17	01	2.A.03	-3	" "	0063
		17	01	1.A.03	-1	" "	0063
		17	01	2.A.04		TV Camera Stower	0064
		17	01	4.D.03	-1	Workspace Equipment Stower	1192
		17	01	1.A.03	-1	TV Camera Stower	0064
		17	01	2.A.17		Camera Stower	0154
		17	01	1.A.03	-1	" "	0154
		17	01	4.D.04	-1	Film Cartridge Stower	0151
		17	01	1.A.03	-3	" " "	0151
26	Retract telescope	01	01	2.B.01	-1	Telescope Position Monitor	0322
		01	01	2.B.01	-6	" " "	0322
		15	01	2.B.01	-1	Telescope Retraction Actuator	0323
		15	01	2.B.01	-6	" " "	0323

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	A-4	
							PAGE	A-1.0-06-1	
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes					
EXPERIMENT: 1.0 Narrow Field UV Telescope							MISSION MODE: A		
							BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
22	Perform pointing sequence	01	01	2.A.01	-1	Telescope Pointing Status Monitor			0324
		01	01	3.B.01	-1	"	"	"	0324
		01	01	3.B.01	-2	"	"	"	0324
		01	01	3.B.01	-3	"	"	"	0324
		01	01	3.B.01	-4	"	"	"	0324
		01	01	3.B.01	-5	"	"	"	0324
		01	01	3.B.01	-6	"	"	"	0324
		15	01	2.A.01	-1	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-1	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-2	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-3	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-4	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-5	Telescope Pointing Control			0325
						Actuator			
		15	01	3.B.01	-6	Telescope Pointing Control			0325
						Actuator			
		15	01	2.B.01	-1	Telescope Pointing Control			0325
						Actuator			
		01	01	2.B.01	-1	Telescope Pointing Status Monitor			0324
23	Perform image and data evaluation	02	01	2.B.01	-1	Stellar Ultraviolet Observer			0326
		02	01	3.B.01	-1	"	"	"	0326
		02	01	3.B.01	-2	"	"	"	0326

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4		
						PAGE A-1.0-06-2		
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
23	(Continued)	02	01	3.B.01	-3	Stellar Ultraviolet Observer		0326
		02	01	3.B.01	-4	"	"	0326
		02	01	3.B.01	-5	"	"	0326
		02	01	3.B.01	-6	"	"	0326
		11	01	2.B.01	-1	Stellar Ultraviolet Evaluator		0327
		11	01	3.B.01	-1	"	"	0327
		11	01	3.B.01	-2	"	"	0327
		11	01	3.B.01	-3	"	"	0327
		11	01	3.B.01	-4	"	"	0327
		11	01	3.B.01	-5	"	"	0327
		11	01	3.B.01	-6	"	"	0327
		29	Develop film	06	01	2.A.27		Film Developer
06	01			4.B.08		"	"	0328
30	Perform film evaluation	11	01	2.A.27		Film Evaluator		0329
		11	01	3.B.01	-1	"	"	0329
		11	01	3.B.01	-2	"	"	0329
		11	01	3.B.01	-3	"	"	0329
		11	01	3.B.01	-4	"	"	0329
		11	01	3.B.01	-5	"	"	0329
		11	01	3.B.01	-6	"	"	0329

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-06-3
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	Monitor observed phenomena	02	01	2.A.01	-1	Stellar Ultraviolet Observer	0326
		02	01	2.B.01		" " "	0326
		02	01	2.A.04		" " "	0326
		02	01	3.B.01	-1	" " "	0326
		02	01	3.B.01	-2	" " "	0326
		02	01	3.B.01	-3	" " "	0326
		02	01	3.B.01	-4	" " "	0326
		02	01	3.B.01	-5	" " "	0326
		02	01	3.B.01	-6	" " "	0326
		04	01	2.A.04		Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-1	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-2	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-3	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-4	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-5	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-6	Stellar Ultraviolet Emission Classifier	0330
		04	01	2.B.01		Stellar Ultraviolet Emission Classifier	0330
40	Determine need for system changes	13	01	2.A.01	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.01	-2	Stellar Ultraviolet Research Planner	0331

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
DISCIPLINE: Astronomy						PAGE A-1.0-06-4	
FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes						MISSION MODE: A	
EXPERIMENT: 1.0 Narrow Field UV Telescope						BASIC FUNCTION: 06 Experiment conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
40	(Continued)	13	01	2.A.03	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.03	-3	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.04	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.14	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.14	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.15	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.15	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.17	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.17	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-3	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-1	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-2	Stellar Ultraviolet Research Planner	0331
13	01	3.B.01	-3	Stellar Ultraviolet Research Planner	0331		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1.0-06-5	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
40	(Continued)	13	01	3.B.01	-4	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-5	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-6	Stellar Ultraviolet Research Planner	0331
41	Evaluate data in real time	02	01	2.A.04		Stellar Ultraviolet Observer	0326
		02	01	3.B.01	-1	" " "	0326
		02	01	3.B.01	-2	" " "	0326
		02	01	3.B.01	-3	" " "	0326
		02	01	3.B.01	-4	" " "	0326
		02	01	3.B.01	-5	" " "	0326
		02	01	3.B.01	-6	" " "	0326
		04	01	2.A.04		Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-1	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-2	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-3	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-4	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-5	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-6	Stellar Ultraviolet Emission Classifier	0330
		11	01	2.A.04		Stellar Ultraviolet Evaluator	0327

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-1.0-06-6
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
41	(Continued)	11	01	3.B.01	-1	Stellar Ultraviolet Evaluator	0327
		11	01	3.B.01	-2	" " "	0327
		11	01	3.B.01	-3	" " "	0327
		11	01	3.B.01	-4	" " "	0327
		11	01	3.B.01	-5	" " "	0327
		11	01	3.B.01	-6	" " "	0327
		12	01	2.A.04		Stellar Ultraviolet Data Analyst	0332
		12	01	3.B.01	-1	" " " "	0332
		12	01	3.B.01	-2	" " " "	0332
		12	01	3.B.01	-3	" " " "	0332
		12	01	3.B.01	-4	" " " "	0332
		12	01	3.B.01	-5	" " " "	0332
		12	01	3.B.01	-6	" " " "	0332
		02	01	2.B.01	-1	Stellar Ultraviolet Observer	0326
		04	01	2.B.01	-1	Stellar Ultraviolet Emission Classifier	0330
		02	01	2.B.01	-3	Stellar Ultraviolet Observer	0326
		02	01	2.B.01	-5	" " "	0326
		02	01	2.B.01	-6	" " "	0326
43	Override failures in mechanical systems	10	01	2.E.02	-1	Star Tracker Controller	0333
		10	01	2.E.02	-2	" " "	0333
		10	01	2.E.02	-3	" " "	0333
		10	01	2.A.04		TV Camera Controller	0334
		10	01	2.A.17		Camera Controller	0335
		10	01	2.A.03	-2	Spectrometer Controller	0336
		10	01	2.A.03	-3	" "	0336
		10	01	2.A.01	-1	Telescope Controller	0337
		10	01	2.B.02	-1	Telescope System Controller	0338
		10	01	3.B.01	-1	" " "	0338

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4		
						PAGE A-1.0-06-7		
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
43	(Continued)	10	01	3.B.01	-2	Telescope System Controller		0338
		10	01	3.B.01	-3	"	"	0338
		10	01	3.B.01	-4	"	"	0338
		10	01	3.B.01	-5	"	"	0338
		10	01	3.B.01	-6	"	"	0338

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-1.0-09-1
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Visually inspect telescope	03	01	2.A.01	-1	Telescope Inspector	0001
6	Functionally check console system	15	01	2.B.01	-1	Astronomy C/D Console Self-Test Control Actuator	0252
		01	01	2.B.01	-1	Astronomy C/D Console Self-Test Display Monitor	0253
7	Activate and check out drives	03	01	2.A.01	-1	Telescope Drive Inspector	0254
		03	01	2.E.05	-1	" " "	0254
		03	01	2.E.05	-2	" " "	0254
		03	01	2.E.05	-3	" " "	0254
		03	01	2.E.05	-4	" " "	0254
		03	01	2.E.05	-5	" " "	0254
		03	01	2.E.05	-5	" " "	0254
		03	01	2.E.05	-6	" " "	0254
		03	01	2.E.05	-7	" " "	0254
		03	01	2.E.05	-8	" " "	0254
		03	01	2.E.05	-9	" " "	0254
		03	01	2.E.05	-10	" " "	0254
		14	01	2.A.01	-1	Telescope Drive Tester	0255
		14	01	2.E.05	-1	" " "	0255
		14	01	2.E.05	-2	" " "	0255
		14	01	2.E.05	-3	" " "	0255
		14	01	2.E.05	-3	" " "	0255
		14	01	2.E.05	-4	" " "	0255
		14	01	2.E.05	-5	" " "	0255
		14	01	2.E.05	-6	" " "	0255
		14	01	2.E.05	-7	" " "	0255
		14	01	2.E.05	-8	" " "	0255

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-1,0-09-2	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	14	01	2.E.05	-9	Telescope Drive Tester	0255
		14	01	2.E.05	-10	" " "	0255
		14	01	2.B.01		" " "	0255
		15	01	2.B.01	-5	Telescope Drive Control Actuator	0256
		15	01	2.B.01	-6	" " " "	0256
		15	01	2.E.01	-1	" " " "	0256
		15	01	2.E.01	-2	" " " "	0256
		15	01	2.E.01	-3	" " " "	0256
		15	01	2.E.01	-4	" " " "	0256
		15	01	2.E.01	-5	" " " "	0256
		15	01	2.E.01	-6	" " " "	0256
		15	01	2.E.01	-7	" " " "	0256
		15	01	2.E.01	-8	" " " "	0256
		15	01	2.E.01	-9	" " " "	0256
		15	01	2.E.01	-10	" " " "	0256
		16	01	2.A.01	-1	Telescope Drive Control Deactuator	0257
		16	01	2.B.01	-5	" " " "	0257
		16	01	2.B.01	-6	" " " "	0257
		16	01	2.E.01	-1	" " " "	0257
		16	01	2.E.01	-1	" " " "	0257
		16	01	2.E.01	-2	" " " "	0257
		16	01	2.E.01	-3	" " " "	0257
		16	01	2.E.01	-4	" " " "	0257
		16	01	2.E.01	-5	" " " "	0257
		16	01	2.E.01	-6	" " " "	0257
		16	01	2.E.01	-7	" " " "	0257
		16	01	2.E.01	-8	" " " "	0257
		16	01	2.E.01	-9	" " " "	0257
		16	01	2.E.01	-10	" " " "	0257

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-09-3
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Check out field camera optics focusing	14	01	2.A.17	-1	Camera Focusing Tester	0258
		01	01	2.A.17	-1	" " "	0258
11	Check out focusing of spectro-graphic section	01	01	2.A.17	-2	Camera Focusing Monitor	0339
		01	01	2.A.28		Spectrograph Focusing Monitor	0340
		01	01	2.A.14	-1	" " "	0340
		01	01	2.A.14	-2	" " "	0340
		09	01	2.A.17	-2	Camera Focusing Aligner	0341
		09	01	2.A.28		Spectrograph Focusing Aligner	0342
		09	01	2.A.14	-1	" " "	0342
		09	01	2.A.14	-2	" " "	0342
		14	01	2.A.17	-2	Camera Focusing Tester	0258
		14	01	2.A.28		Spectrograph Focusing Tester	0259
		14	01	2.A.14	-1	" " "	0259
		14	01	2.A.14	-2	" " "	0259
36	Inspect equipment for deficiencies	03	01	2.A.01	-1	Telescope Inspector	0001
		03	01	2.E.02	-1	Star Tracker Inspector	0293
		03	01	2.E.02	-2	" " "	0293
		03	01	2.E.02	-3	" " "	0293
		03	01	2.A.04		TV Camera Inspector	0079
		03	01	2.A.17		Camera Inspector	0294
		03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078
		03	01	2.A.03	-3	" " "	0078
		03	01	2.A.14	-1	Grating Inspector	0295
		03	01	2.A.14	-2	" " "	0295
		03	01	2.A.15	-1	Band Filter Inspector	0296
		03	01	2.A.15	-2	" " "	0296
		03	01	4.D.07	-1	Camera Assembly Inspector	0181

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-10-1
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE:	A
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Functionally check console systems	15	01	2.B.01	-1	Astronomy C/D Console Self-Test Control Actuator	0252
		01	01	2.B.01	-1	Astronomy C/D Console Self-Test Display Monitor	0253
32	Repair malfunctioning equipment	28	01	2.A.01	-1	Telescope Repairer	1193
		28	01	2.E.02	-1	Star Tracker Repairer	0694
		28	01	2.E.02	-2	" " "	0694
		28	01	2.E.02	-3	" " "	0694
		28	01	2.A.04		TV System Repairer	1194
		28	01	2.A.17		Camera Repairer	1195
		28	01	2.A.03	-2	Spectrometer Repairer	0779
		28	01	2.A.03	-3	" "	0779
		28	01	2.A.14	-1	Grating Repairer	1196
		28	01	2.A.14	-2	" "	1196
		28	01	2.A.15	-1	Band Filter Repairer	1197
		28	01	2.A.15	-2	" " "	1197
		28	01	4.D.07	-1	Camera Repairer	1195
33	Replace malfunctioning equipment/parts	26	01	2.A.01	-1	Telescope Module Remover	0187
		26	01	2.E.02	-1	Star Tracker Module Remover	0343
		26	01	2.E.02	-2	" " " "	0343
		26	01	2.A.04		TV System Module Remover	0345
		26	01	2.A.17	-1	Camera Module Remover	0158
		26	01	2.A.03	-2	Spectrometer Module Remover	0109
		26	01	2.A.03	-3	" " "	0109
		26	01	2.A.17	-2	Camera Module Remover	0158
		26	01	4.D.07	-1	" " "	0158
		26	01	4.D.07	-2	" " "	0158

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-1.0-10-2
EXPERIMENT: 1.0 Narrow Field UV Telescope						MISSION MODE:	A
						BASIC FUNCTION:	10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	27	01	2.A.01	-1	Telescope Module Installer	0188
		27	01	2.A.01	-1	" " "	0188
		27	01	2.E.02	-1	Star Tracker Module Installer	0344
		27	01	2.E.02	-2	" " " "	0344
		27	01	2.A.04		TV System Module Installer	0346
		27	01	2.A.17	-1	Camera Module Installer	0160
		27	01	2.A.03	-2	Spectrometer Module Installer	0110
		27	01	2.A.03	-3	" " "	0110
		27	01	2.A.15	-1	Band Filter Module Installer	0348
		27	01	2.A.15	-2	" " " "	0348
		27	01	4.D.07	-1	Camera Module Installer	0160
		26	01	2.A.15	-1	Band Filter Module Remover	0347
		26	01	2.A.15	-2	" " " "	0347
		27	01	4.D.07	-2	Camera Module Installer	0160

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DISCIPLINE: Astronomy

FUNCTIONAL PROGRAM ELEMENT (FPE):

A-4 Intermediate Size UV Telescopes

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Wide Field UV Telescope

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-04-1	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Visually inspect telescope	03	01	2.A.01	-3	Telescope Inspector	0001
2	Remove, fold, and stow protective covering	26	01	4.D.01	-1	Telescope Cover Remover	0002
3	Remove protective caps on optics	26	01	4.D.01	-2	Telescope Cover Remover	0002
4	Release launch restraints	26	01	4.D.02	-1	Launch Restraint Remover	0003
5	Set up work space in console area	18	01	4.D.03	-1	Workspace Equipment Unstower	1191
6	Functionally check console systems	15	01	2.B.01	-1	Astronomy C/D Console Self-Test Control Actuator	0252
		01	01	2.B.01	-1	Astronomy C/D Console Self-Test Display Monitor	0253
7	Activate and check out drives	03	01	2.A.01	-3	Telescope Drive Inspector	0254
		03	01	2.E.05	-1	" " "	0254
		03	01	2.E.05	-2	" " "	0254
		03	01	2.E.05	-3	" " "	0254
		03	01	2.E.05	-4	" " "	0254
		03	01	2.E.05	-5	" " "	0254
		03	01	2.E.05	-6	" " "	0254
		03	01	2.E.05	-7	" " "	0254
		03	01	2.E.05	-8	" " "	0254

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-04-2	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes			MISSION MODE: A	
EXPERIMENT: 2.0 Wide Field UV Telescope						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	03	01	2.E.05	-9	Telescope Drive Inspector	0254
		03	01	2.E.05	-10	" " "	0254
		14	01	2.A.01	-3	Telescope Drive Tester	0255
		14	01	2.E.05	-1	" " "	0255
		14	01	2.E.05	-2	" " "	0255
		14	01	2.E.05	-3	" " "	0255
		14	01	2.E.05	-4	" " "	0255
		14	01	2.E.05	-5	" " "	0255
		14	01	2.E.05	-6	" " "	0255
		14	01	2.E.05	-7	" " "	0255
		14	01	2.E.05	-8	" " "	0255
		14	01	2.E.05	-9	" " "	0255
		14	01	2.E.05	-10	" " "	0255
		14	01	2.B.01		" " "	0255
		15	01	2.B.01	-5	Telescope Drive Control Actuator	0256
		15	01	2.A.01	-1	" " " "	0256
		15	01	2.E.01	-1	" " " "	0256
		15	01	2.E.01	-2	" " " "	0256
		15	01	2.E.01	-3	" " " "	0256
		15	01	2.E.01	-4	" " " "	0256
		15	01	2.E.01	-5	" " " "	0256
		15	01	2.E.01	-6	" " " "	0256
		15	01	2.E.01	-7	" " " "	0256
		15	01	2.E.01	-8	" " " "	0256
		15	01	2.E.01	-9	" " " "	0256
		15	01	2.E.01	-10	" " " "	0256
		15	01	2.B.01	-6	" " " "	0256
		16	01	2.A.01	-1	Telescope Drive Control Deactuator	0257
		16	01	2.E.01	-1	" " " "	0257
		16	01	2.E.01	-2	" " " "	0257
		16	01	2.E.01	-3	" " " "	0257

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-2.0-04-3
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	16	01	2.E.01	-4	Telescope Drive Control Deactuator	0257
		16	01	2.E.01	-5	" " " "	0257
		16	01	2.E.01	-6	" " " "	0257
		16	01	2.E.01	-7	" " " "	0257
		16	01	2.E.01	-8	" " " "	0257
		16	01	2.E.01	-9	" " " "	0257
		16	01	2.E.01	-10	" " " "	0257
		16	01	2.B.01	-5	" " " "	0257
		16	01	2.B.01	-6	" " " "	0257
8	Load film cassettes into cameras	27	01	2.A.17	-1	Film Cartridge Installer	0046
		27	01	2.A.17	-2	" " " "	0046
		27	01	4.D.04	-1	" " " "	0046
		27	01	4.D.04	-2	" " " "	0046
		27	01	4.D.04	-3	" " " "	0046
10	Check out field camera optics focusing	14	01	2.A.17	-1	Camera Focusing Tester	0258
		01	01	2.A.17	-1	" " " "	0258
11	Check out focusing of spectrograph section	14	01	2.A.17	-2	Camera Focusing Tester	0258
		14	01	2.A.28		Spectrograph Focusing Tester	0259
		14	01	2.A.14	-1	" " " "	0259
		14	01	2.A.14	-2	" " " "	0259
		01	01	2.A.17	-2	Camera Focusing Tester	0258
		01	01	2.A.28		Spectrograph Focusing Tester	0259
		01	01	2.A.14	-1	" " " "	0259
		01	01	2.A.14	-2	" " " "	0259

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-2.0-04-4
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Verify stowage of loose parts in instrument chamber	03	01	1.A.01	-12	Telescope Chamber Inspector	0260
13	Seal instrument chamber	27	01	1.A.01	-13	Telescope Chamber Inside Hatch Closer	0261
		01	01	1.A.02	-7	Telescope Chamber Status Monitor	0262
14	Depressurize telescope chamber	15	01	1.A.02	-8	Telescope Chamber Depressurization Actuator	0263
		01	01	1.A.02	-8	Telescope Chamber Status Monitor	0262
15	Monitor temperature control system until stabilized	01	01	1.A.02	-9	Telescope Chamber Status Monitor	0262
16	Open hatch cover	01	01	1.A.02	-7	Telescope Chamber Status Monitor	0262
		01	01	1.A.02	-8	" " " "	0262
		26	01	1.A.01	-13	Telescope Chamber Inside Hatch Closer	0261
		15	01	1.A.02	-10	Telescope Chamber Outside Hatch Control Actuator	0316
		15	01	1.A.02	-8	Telescope Chamber Depressurization Actuator	0263
17	Deploy telescope	01	01	2.B.01	-6	Telescope Deployment Status Monitor	0317

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
DISCIPLINE: Astronomy						PAGE A-2.0-04-5	
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	(Continued)	15	01	2.B.01	-6	Telescope Deployment Control Actuator	0318
18	Turn on main power to instrument detectors	01	01	2.B.02	-2	Instrument Power Monitor	0139
		15	01	2.B.02	-2	Instrument Power Actuator	0035
19	Activate data handling equipment	15	01	2.B.02	-2	Instrument Power Actuator	0035
		01	01	2.B.02	-2	Instrument Power Monitor	0139
20	Verify instrument is in thermal equilibrium	01	01	2.B.02	-5	Telescope Status Monitor	0264
		01	01	1.A.02	-9	Telescope Chamber Status Monitor	0262
21	Insert experiment conditions	13	01	2.A.01	-3	Telescope Mode Selector	0265
		13	01	2.A.03		Spectrometer Mode Selector	0267
		13	01	2.A.04	-1	TV Mode Selector	0268
		13	01	2.A.14	-1	Grating Mode Selector	0269
		13	01	2.A.14	-2	" " "	0269
		13	01	2.A.15	-1	Band Filter Mode Selector	0270
		13	01	2.A.15	-2	" " " "	0270
		13	01	2.A.17	-1	Camera Mode Selector	0271
		13	01	2.A.17	-2	" " "	0271
		13	01	2.B.01	-1	Telescope Mode Selector	0265
		13	01	2.B.01	-4	Spectrometer Mode Selector	0267
		13	01	2.B.01	-5	Telescope Mode Selector	0265
		13	01	2.E.02	-1	Star Tracker Mode Selector	0272
		13	01	2.E.02	-2	" " " "	0272
		13	01	2.E.02	-3	" " " "	0272

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-04-6	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
21	(Continued)	13	01	3.B.01	-1	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-2	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-3	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-4	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-5	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	3.B.01	-6	Stellar Ultraviolet Observation Mode Selector	0273
		13	01	4.B.01	-1	Computer Mode Selector	0274
		13	01	4.B.02	-1	Amplifier Mode Selector	0275
		13	01	4.B.02	-2	" " "	0275
		13	01	4.B.01	-1	Computer Mode Selector	0274
		13	01	4.B.02	-1	Amplifier Mode Selector	0275
		13	01	4.B.02	-2	" " "	0275
		13	01	4.B.03		Phase Shifter Mode Selector	0276
		15	01	2.A.01	-3	Telescope Mode Control Actuator	0266
		15	01	2.A.03		Spectrometer Mode Control Actuator	0277
		15	01	2.A.04	-1	TV Mode Control Actuator	0278
		15	01	2.A.14	-1	Grating Mode Control Actuator	0279
		15	01	2.A.14	-2	" " " "	0279
		15	01	2.A.15	-1	Band Filter Mode Control Actuator	0280
		15	01	2.A.15	-2	" " " "	0280
		15	01	2.A.17	-1	Camera Mode Control Actuator	0281
		15	01	2.A.17	-2	" " " "	0281
		15	01	2.B.01	-2	Telescope Mode Control Actuator	0266
		15	01	2.B.01	-4	Spectrometer Mode Control Actuator	0277

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-2.0-04-7
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
21	(Continued)	15	01	2.B.01	-5	Telescope Mode Control Actuator	0266
		15	01	2.E.02	-1	Star Tracker Mode Control Actuator	0282
		15	01	2.E.02	-2	Star Tracker Mode Control Actuator	0282
		15	01	2.E.02	-3	Star Tracker Mode Control Actuator	0282
		15	01	3.B.01	-1	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-2	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-3	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-4	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-5	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	3.B.01	-6	Stellar Ultraviolet Observation Mode Control Actuator	0283
		15	01	4.B.01	-1	Computer Mode Control Actuator	0284
		15	01	4.B.02	-1	Amplifier Mode Control Actuator	0285
		15	01	4.B.02	-2	" " " "	0285
		15	01	4.B.03		Phase Shifter Mode Control Actuator	0286
27	Prepare film cassettes	03	01	4.D.04	-1	Film Cartridge Inspector	0287
		26	01	4.D.04	-1	Film Cartridge Installer	0046
		26	01	2.E.06		" " "	0046
		18	01	4.D.04	-1	Film Cartridge Unstower	0288
		18	01	1.A.03	-1	" " "	0288

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	A-4
							PAGE	A-2.0-04-8
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes					
EXPERIMENT: 2.0 Wide Field UV Telescope							MISSION MODE: A	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
28	Activate airlock and mechanical film changing system	01	01	1.A.02	-1	Airlock Status Monitor	0009	
		01	01	1.A.02	-2	" " "	0009	
		15	01	2.E.06		Film Changing System Actuator	0289	
		15	01	2.B.01	-7	" " " "	0289	
		15	01	1.A.02	-2	Airlock Pressurization Actuator	0133	
		01	01	2.B.01	-7	Film Changing System Monitor	0290	
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032	
35	Unlock/unstow equipment after launch	18	01	1.A.03	-1	Spectrometer Unstower	0007	
		26	01	2.A.01	-3	Launch Restraint Remover	0003	
		18	01	2.E.02	-1	Star Tracker Unstower	0291	
		18	01	2.E.02	-2	" " "	0291	
		18	01	2.A.04		TV Camera Unstower	0054	
		18	01	2.A.17		Camera Unstower	0292	
		18	01	2.A.03	-2	Spectrometer Unstower	0007	
		18	01	2.A.03	-3	" "	0007	
		26	01	4.D.02	-1	Launch Restraint Remover	0003	
		18	01	1.A.03	-1	Star Tracker Unstower	0291	
		18	01	1.A.03	-1	TV Camera Unstower	0054	
		18	01	1.A.03	-1	Camera Unstower	0292	
		18	01	4.D.07	-1	" "	0292	
		18	01	2.E.02	-3	Star Tracker Unstower	0291	
36	Inspect equipment for deficiencies	03	01	2.A.01	-3	Telescope Inspector	0001	
		03	01	2.E.02	-1	Star Tracker Inspector	0293	
		03	01	2.E.02	-2	" " "	0293	
		03	01	2.A.04		TV Camera Inspector	0079	
		03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078	
		03	01	2.A.03	-3	" " "	0078	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-2.0-04-9
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	03	01	2.A.14	-1	Grating Inspector	0295
		03	01	2.A.14	-2	" "	0295
		03	01	2.A.15	-2	Band Filter Inspector	0296
		03	01	4.D.07	-1	Camera Inspector	0294
		03	01	2.E.02	-3	Star Tracker Inspector	0293
37	Align equipment for operation	09	01	2.A.01	-3	Telescope Aligner	0297
		09	01	3.B.01		" "	0297
		09	01	2.E.02	-1	Star Tracker Aligner	0298
		09	01	3.B.01		" " "	0298
		09	01	4.D.07		Camera Aligner	0299
		09	01	3.B.01		" "	0299
		09	01	4.D.04	-3	" "	0299
		09	01	3.B.01		" "	0299
		09	01	2.A.03	-2	Spectrometer Aligner	0300
		09	01	3.B.01		" "	0300
		09	01	2.A.14	-1	Grating Aligner	0301
		09	01	3.B.01		" "	0301
		09	01	2.A.15	-2	Band Filter Aligner	0302
		09	01	2.E.02	-3	Star Tracker Aligner	0298
		09	01	2.B.01	-2	Telescope Aligner	0297
		09	01	2.B.01	-4	Spectrometer Aligner	0300
		09	01	2.B.01	-5	Telescope Aligner	0297
		09	01	2.B.01	-6	" "	0297
38	Prepare equipment for deployment	18	01	2.A.01	-3	Telescope Unstower	0303
		26	01	4.D.01	-1	Telescope Cover Remover	0002
		26	01	4.D.01	-2	Telescope Cap Remover	0308
		26	01	4.D.01	-5	Star Tracker Cap Remover	0304

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-2.0-04-10
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	18	01	2.E.02	-1	Star Tracker Unstower	0291
		27	01	2.E.02	-1	Star Tracker Installer	0305
		18	01	2.E.02	-2	Star Tracker Unstower	0291
		27	01	2.E.02	-2	Star Tracker Installer	0305
		27	01	2.A.01	-3	" " "	0305
		18	01	2.A.04		TV Camera Unstower	0054
		27	01	2.A.04		TV Camera Installer	0306
		27	01	2.A.01	-3	" " "	0306
		18	01	4.D.07	-2	Camera Unstower	0292
		26	01	4.D.01	-7	Camera Cap Remover	0307
		27	01	4.D.07	-2	Camera Installer	0039
		18	01	2.A.03	-2	Spectrometer Unstower	0007
		18	01	2.A.03	-3	" "	0007
		27	01	2.A.03	-2	Spectrometer Installer	0006
		27	01	2.E.02	-3	Star Tracker Installer	0305
		27	01	2.A.01	-1	" " "	0305
		18	01	2.E.02	-3	Star Tracker Unstower	0291
		26	01	4.D.01	-6	TV Camera Cap Remover	0309
		27	01	2.A.01	-3	Camera Installer	0039
		27	01	2.A.03	-3	Spectrometer Installer	0006
		27	01	2.A.01	-3	" "	0006
42	Change system configurations:						
42	.1 Change spectrometer gratings	26	01	2.A.03	-2	Grating Remover	0310
		26	01	2.A.14	-1	" "	0310
		26	01	2.A.14	-2	" "	0310
		26	01	2.A.03	-3	" "	0310
		27	01	2.A.03	-2	Grating Installer	0311
		27	01	2.A.14	-1	" "	0311

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-2.0-04-11
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE:	A
						BASIC FUNCTION:	04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
42	.1 (Continued)	27	01	2.A.14	-2	Grating Installer	0311
		27	01	2.A.03	-3	" "	0311
		27	01	3.B.01		" "	0311
42	.2 Change band filters	26	01	2.A.17	-1	Band Filter Remover	0312
		26	01	2.A.17	-2	" " "	0312
		26	01	4.D.07	-1	" " "	0312
		26	01	2.A.15	-1	" " "	0312
		26	01	2.A.15	-2	" " "	0312
		27	01	2.A.17	-1	Band Filter Installer	0313
		27	01	2.A.17	-2	" " "	0313
		27	01	4.D.07	-1	" " "	0313
		27	01	2.A.15	-1	" " "	0313
		27	01	2.A.15	-2	" " "	0313
		27	01	3.B.01		" " "	0313
44	Change cameras in field photography section	26	01	2.A.17	-1	Camera Remover	0314
		26	01	2.A.01	-1	" "	0314
		27	01	2.A.17	-1	Camera Installer	0039
		27	01	2.A.01	-3	" "	0039
46	Replace spectrograph	26	01	2.A.01	-3	Spectrograph Remover	2040
		26	01	2.A.28		" "	2040
		27	01	2.A.28		Spectrograph Installer	2041
		27	01	2.A.01	-3	" "	2041

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	A-4
							PAGE	A-2.0-05-1
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope				MISSION MODE: A				
							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
24	Deactivate data handling equipment	16	01	4.B.01	-1	Computer Control Deactuator	0319	
		16	01	2.B.01	-2	Telescope Control Deactuator	0320	
25	Turn off main power to detectors	16	01	2.B.01	-3	Telescope Control Deactuator	0320	
26	Retract telescope	01	01	2.B.01	-2	Telescope Position Monitor	0322	
		01	01	2.B.01	-6	" " "	0322	
		15	01	2.B.01	-2	Telescope Retraction Actuator	0323	
		15	01	2.B.01	-6	" " "	0323	
31	Package and store materials	26	01	4.D.02	-1	Launch Restraint Installer	0172	
		17	01	2.A.01	-3	" " "	0172	
		17	01	2.E.02	-1	Star Tracker Stower	0321	
		17	01	2.E.02	-2	" " "	0321	
		17	01	1.A.03	-1	" " "	0321	
		17	01	2.A.03	-2	Spectrometer Stower	0063	
		17	01	2.A.03	-3	" "	0063	
		17	01	1.A.03	-1	" "	0063	
		17	01	2.A.04		TV Camera Stower	0064	
		17	01	4.D.03	-1	Workspace Equipment Stower	1192	
		17	01	1.A.03	-1	TV Camera Stower	0064	
		17	01	2.A.17		Camera Stower	0154	
		17	01	1.A.03	-1	" "	0154	
		17	01	4.D.04	-1	Film Cartridge Stower	0151	
		17	01	1.A.03	-3	" " "	0151	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES A-4
							PAGE A-2.0-06-1
DISCIPLINE: Astronomy		FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes					
EXPERIMENT: 2.0 Wide Field UV Telescope		MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		
22	Perform pointing sequence	01	01	2.A.01	-3	Telescope Pointing Status Monitor	0324
		01	01	3.B.01	-1	" " " "	0324
		01	01	3.B.01	-2	" " " "	0324
		01	01	3.B.01	-3	" " " "	0324
		01	01	3.B.01	-4	" " " "	0324
		01	01	3.B.01	-5	" " " "	0324
		01	01	3.B.01	-6	" " " "	0324
		15	01	2.A.01	-3	Telescope Pointing Control	0325
						Actuator	
		15	01	3.B.01	-1	Telescope Pointing Control	0325
						Actuator	
		15	01	3.B.01	-2	Telescope Pointing Control	0325
						Actuator	
		15	01	3.B.01	-3	Telescope Pointing Control	0325
						Actuator	
23	Perform image and data evaluation	15	01	3.B.01	-4	Telescope Pointing Control	0325
						Actuator	
		15	01	3.B.01	-5	Telescope Pointing Control	0325
						Actuator	
		15	01	3.B.01	-6	Telescope Pointing Control	0325
						Actuator	
		15	01	2.B.01	-2	Telescope Pointing Control	0325
				Actuator			
		01	01	2.B.01	-2	Telescope Pointing Status Monitor	0325
		02	01	2.B.01	-2	Stellar Ultraviolet Observer	0326
		02	01	3.B.01	-1	" " " "	0326
		02	01	3.B.01	-2	" " " "	0326
		02	01	3.B.01	-3	" " " "	0326
		02	01	3.B.01	-4	" " " "	0326

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	A-4	
							PAGE A-2.0-06-2		
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes						
EXPERIMENT: 2.0 Wide Field UV Telescope			BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A	
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
23	(Continued)	02	01	3.B.01	-5	Stellar Ultraviolet Observer	0326		
		02	01	3.B.01	-6	" " "	0326		
		11	01	2.B.01	-2	Stellar Ultraviolet Evaluator	0327		
		11	01	3.B.01	-1	" " "	0327		
		11	01	3.B.01	-2	" " "	0327		
		11	01	3.B.01	-3	" " "	0327		
		11	01	3.B.01	-4	" " "	0327		
		11	01	3.B.01	-5	" " "	0327		
		11	01	3.B.01	-6	" " "	0327		
29	Develop film	06	01	2.A.27		Film Developer	0328		
		06	01	4.B.08		" "	0328		
30	Perform film evaluation	11	01	2.A.27		Film Evaluator	0329		
		11	01	3.B.01	-1	" "	0329		
		11	01	3.B.01	-2	" "	0329		
		11	01	3.B.01	-3	" "	0329		
		11	01	3.B.01	-4	" "	0329		
		11	01	3.B.01	-5	" "	0329		
		11	01	3.B.01	-6	" "	0329		
39	Monitor observed phenomena	02	01	2.A.01	-3	Stellar Ultraviolet Observer	0326		
		02	01	2.B.01	-2	" " "	0326		
		02	01	2.A.04		" " "	0326		
		02	01	3.B.01	-1	" " "	0326		
		02	01	3.B.01	-2	" " "	0326		
		02	01	3.B.01	-3	" " "	0326		
		02	01	3.B.01	-4	" " "	0326		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-06-3	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	02	01	3.B.01	-5	Stellar Ultraviolet Observer	0326
		02	01	3.B.01	-6	" " "	0326
		04	01	2.A.04		Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-1	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-2	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-3	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-4	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-5	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-6	Stellar Ultraviolet Emission Classifier	0330
40	Determine need for system changes	13	01	2.A.01	-3	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.01	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.03	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.03	-3	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.04	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.14	-1	Stellar Ultraviolet Research Planner	0331

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-06-4	
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes			
EXPERIMENT:						MISSION MODE: A	
2.0 Wide Field UV Telescope						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
40	(Continued)	13	01	2.A.14	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.15	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.15	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.17	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.A.17	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-1	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-2	Stellar Ultraviolet Research Planner	0331
		13	01	2.E.02	-3	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-1	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-2	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-3	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-4	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-5	Stellar Ultraviolet Research Planner	0331
		13	01	3.B.01	-6	Stellar Ultraviolet Research Planner	0331
41	Evaluate data in real time	02	01	2.A.04		Stellar Ultraviolet Observer	0326

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-06-5	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
41	(Continued)	02	01	2.A.04		Stellar Ultraviolet Observer	0326
		02	01	3.B.01	-1	" " "	0326
		02	01	3.B.01	-2	" " "	0326
		02	01	3.B.01	-3	" " "	0326
		02	01	3.B.01	-4	" " "	0326
		02	01	3.B.01	-5	" " "	0326
		02	01	3.B.01	-6	" " "	0326
		04	01	2.A.04		Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-1	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-2	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-3	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-4	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-5	Stellar Ultraviolet Emission Classifier	0330
		04	01	3.B.01	-6	Stellar Ultraviolet Emission Classifier	0330
		11	01	2.A.04		Stellar Ultraviolet Evaluator	0327
		11	01	3.B.01	-1	" " "	0327
		11	01	3.B.01	-2	" " "	0327
		11	01	3.B.01	-3	" " "	0327
		11	01	3.B.01	-4	" " "	0327
		11	01	3.B.01	-5	" " "	0327
		11	01	3.B.01	-6	" " "	0327
		12	01	2.A.04		Stellar Ultraviolet Data Analyst	0332
		12	01	3.B.01	-1	" " " "	0332

FLIGHT EXPERIMENT TASK-SKILLS							SERIES A-4			
							PAGE A-2.0-06-6			
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes						
EXPERIMENT: 2.0 Wide Field UV Telescope				MISSION MODE: A						
				BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL				
NO.	DESCRIPTION					TITLE	NO.			
41	(Continued)	12	01	3.B.01	-2	Stellar Ultraviolet Data Analyst	0332			
		12	01	3.B.01	-3	" " " "	0332			
		12	01	3.B.01	-4	" " " "	0332			
		12	01	3.B.01	-5	" " " "	0332			
		12	01	3.B.01	-6	" " " "	0332			
		02	01	2.B.01	-2	Stellar Ultraviolet Observer	0326			
		04	01	2.B.01	-2	Stellar Ultraviolet Emission Classifier	0330			
		02	01	2.B.02	-3	Stellar Ultraviolet Observer	0326			
		02	01	2.B.02	-5	" " "	0326			
		02	01	2.B.02	-6	" " "	0326			
		43	Override failures in mechanical systems	10	01	2.E.02	-1	Star Tracker Controller	0333	
				10	01	2..E.02	-2	" " "	0333	
				10	01	2.E.02	-3	" " "	0333	
10	01			2.A.04		TV Camera Controller	0334			
10	01			2.A.17		Camera Controller	0335			
10	01			2.A.03	-2	Spectrometer Controller	0336			
10	01			2.A.03	-3	" "	0336			
10	01			2.A.01	-3	Telescope Controller	0337			
10	01			2.B.02	-2	Telescope System Controller	0338			
10	01			3.B.01	-1	" " "	0338			
10	01			3.B.01	-2	" " "	0338			
10	01			3.B.01	-3	" " "	0338			
10	01			3.B.01	-4	" " "	0338			
10	01			3.B.01	-5	" " "	0338			
10	01			3.B.01	-6	" " "	0338			

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
DISCIPLINE: Astronomy						PAGE	A-2.0-09-1
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Visually inspect telescope	03	01	2.A.01	-3	Telescope Inspector	0001
6	Functionally check console systems	15	01	2.B.01	-2	Astronomy C/D Self-Test Control Actuator	0252
		01	01	2.B.01	-2	Astronomy C/D Console Self-Test Display Monitor	0253
7	Activate and check out drives	03	01	2.A.01	-3	Telescope Drive Inspector	0254
		03	01	2.E.05	-1	" " "	0254
		03	01	2.E.05	-2	" " "	0254
		03	01	2.E.05	-3	" " "	0254
		03	01	2.E.05	-4	" " "	0254
		03	01	2.E.05	-5	" " "	0254
		03	01	2.E.05	-6	" " "	0254
		03	01	2.E.05	-7	" " "	0254
		03	01	2.E.05	-8	" " "	0254
		03	01	2.E.05	-9	" " "	0254
		03	01	2.E.05	-10	" " "	0254
		14	01	2.A.01	-3	Telescope Drive Tester	0255
		14	01	2.E.05	-1	" " "	0255
		14	01	2.E.05	-2	" " "	0255
		14	01	2.E.05	-3	" " "	0255
		14	01	2.E.05	-4	" " "	0255
		14	01	2.E.05	-5	" " "	0255
		14	01	2.E.05	-6	" " "	0255
		14	01	2.E.05	-7	" " "	0255
		14	01	2.E.05	-8	" " "	0255
		14	01	2.E.05	-9	" " "	0255

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4			
						PAGE A-2.0-09-2			
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes						
EXPERIMENT: 2.0 Wide Field UV Telescope			MISSION MODE: A						
			BASIC FUNCTION: 09 Scheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE			NO.	
7	(Continued)	14	01	2.E.05	-10	Telescope Drive Tester			0255
		14	01	2.B.01	-2	" " "			0255
		15	01	2.B.01	-5	Telescope Drive Control Actuator			0256
		15	01	2.A.01	-3	" " " "			0256
		15	01	2.E.01	-1	" " " "			0256
		15	01	2.E.01	-2	" " " "			0256
		15	01	2.E.01	-3	" " " "			0256
		15	01	2.E.01	-4	" " " "			0256
		15	01	2.E.01	-6	" " " "			0256
		15	01	2.E.01	-7	" " " "			0256
		15	01	2.E.01	-8	" " " "			0256
		15	01	2.E.01	-9	" " " "			0256
		15	01	2.E.01	-10	" " " "			0256
		15	01	2.B.01	-6	" " " "			0256
		16	01	2.A.01	-1	Telescope Drive Control Deactuator			0257
		16	01	2.E.01	-1	" " " "			0257
		16	01	2.E.01	-2	" " " "			0257
		16	01	2.E.01	-3	" " " "			0257
		16	01	2.E.01	-4	" " " "			0257
		16	01	2.E.01	-5	" " " "			0257
		16	01	2.E.01	-6	" " " "			0257
		16	01	2.E.01	-7	" " " "			0257
		16	01	2.E.01	-8	" " " "			0257
		16	01	2.E.01	-9	" " " "			0257
		16	01	2.E.01	-10	" " " "			0257
		16	01	2.B.01	-5	" " " "			0257
		16	01	2.B.01	-6	" " " "			0257

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4	
						PAGE	A-2.0-09-3	
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes					
EXPERIMENT: 2.0 Wide Field UV Telescope			MISSION MODE: A					
						BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
10	Check out field camera optics focusing		14	01	2.A.17	-1	Camera Focusing Tester	0258
			01	01	2.A.17	-1	" " "	0258
11	Check out focusing of spectro-graphic section		01	01	2.A.17	-2	Camera Focusing Monitor	0339
			01	01	2.A.28		Spectrograph Focusing Monitor	0340
			01	01	2.A.14	-1	" " "	0340
			01	01	2.A.14	-2	" " "	0340
			09	01	2.A.17	-2	Camera Focusing Aligner	0341
			09	01	2.A.28		Spectrograph Focusing Aligner	0342
			09	01	2.A.14	-1	" " "	0342
			09	01	2.A.14	-2	" " "	0342
			14	01	2.A.17	-2	Camera Focusing Tester	0258
			14	01	2.A.28		Spectrograph Focusing Tester	0259
			14	01	2.A.14	-1	" " "	0259
			14	01	2.A.14	-2	" " "	0259
36	Inspect equipment for deficiencies		03	01	2.A.01	-3	Telescope Inspector	0001
			03	01	2.E.02	-1	Star Tracker Inspector	0293
			03	01	2.E.02	-2	" " "	0293
			03	01	2.E.02	-3	" " "	0293
			03	01	2.A.04		TV Camera Inspector	0079
			03	01	2.A.17		Camera Inspector	0294
			03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078
			03	01	2.A.03	-3	" " "	0078
			03	01	2.A.14	-1	Grating Inspector	0295
			03	01	2.A.14	-2	" " "	0295
			03	01	2.A.15	-1	Band Filter Inspector	0296
			03	01	2.A.15	-2	" " "	0296
	03	01	4.D.07	-1	Camera Assembly Inspector	0181		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	A-4
						PAGE	A-2.0-10-1
DISCIPLINE: Astronomy			FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes				
EXPERIMENT: 2.0 Wide Field UV Telescope						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Functionally check console systems	15	01	2.B.01	-2	Astronomy C/D Console Self-Test Actuator	0252
		01	01	2.B.01	-2	Astronomy C/D Console Self-Test Display Monitor	0253
32	Repair malfunctioning equipment	28	01	2.A.01	-3	Telescope Repairer	1193
		28	01	2.E.02	-1	Star Tracker Repairer	0694
		28	01	2.E.02	-2	" " "	0694
		28	01	2.E.02	-3	" " "	0694
		28	01	2.A.04		TV System Repairer	1194
		28	01	2.A.17		Camera Repairer	1195
		28	01	2.A.03	-2	Spectrometer Repairer	0779
		28	01	2.A.03	-3	" "	0779
		28	01	2.A.14	-1	Grating Repairer	1196
		28	01	2.A.14	-2	" "	1196
		28	01	2.A.15	-1	Band Filter Repairer	1197
		28	01	2.A.15	-2	" " "	1197
		28	01	4.D.07	-1	Camera Repairer	1195
33	Replace malfunctioning equipment/parts	26	01	2.A.01	-3	Telescope Module Remover	0187
		26	01	2.E.02	-1	Star Tracker Module Remover	0343
		26	01	2.E.02	-2	" " " "	0343
		26	01	2.A.04		TV System Module Remover	0345
		26	01	2.A.17	-1	Camera Module Remover	0158
		26	01	2.A.03	-2	Spectrometer Module Remover	0109
		26	01	2.A.03	-3	" " "	0109
		26	01	2.A.17	-2	Camera Module Remover	0158
		26	01	4.D.07	-1	" " "	0158
		26	01	4.D.07	-2	" " "	0158

FLIGHT EXPERIMENT TASK-SKILLS						SERIES A-4	
						PAGE A-2.0-10-2	
DISCIPLINE: Astronomy				FPE/SUBGROUP: A-4 Intermediate Size UV Telescopes			
EXPERIMENT: 2.0 Wide Field UV Telescope				MISSION MODE: A			
				BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	27	01	2.A.01	-3	Telescope Module Installer	0188
		27	01	2.E.02	-1	Star Tracker Module Installer	0344
		27	01	2.E.02	-2	" " " "	0344
		27	01	2.A.04		TV System Module Installer	0346
		27	01	2.A.17	-1	Camera Module Installer	0160
		27	01	2.A.03	-2	Spectrometer Module Installer	0110
		27	01	2.A.03	-3	" " " "	0110
		27	01	2.A.15	-1	Band Filter Module Installer	0348
		27	01	2.A.15	-2	" " " "	0348
		27	01	4.D.07	-1	Camera Module Installer	0160
		26	01	2.A.15	-1	Band Filter Module Remover	0347
		26	01	2.A.15	-2	" " " "	0347
		27	01	4.D.07	-2	Camera Module Installer	0160

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT(FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

- 1.0 Optical Frequency Demonstration
- 2.0 Millimeter-Wave Communication System and Propagation Demonstration
- 3.0 Surveillance and Search and Rescue Systems Demonstration
- 4.0 Satellite Navigation Techniques for Terrestrial Users
- 5.0 On-Board Laser Ranging
- 6.0 Autonomous Navigation Systems for Space
- 7.0 Transmitter Breakdown Tests

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Optical Frequency Demonstration

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-1.0-04-1	
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT:						MISSION MODE: A	
1.0 Optical Frequency Demonstration						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Reconfigure laser optical components	09	01	2.A.12	-1	Laser Optics Aligner	0483
		26	01	2.A.12	-1	Laser Optics Remover	0485
		27	01	2.A.12	-1	Laser Optics Installer	0484
2	Reconfigure laser electronic components	27	01	2.A.12	-1	Laser Electronics Installer	0486
		09	01	2.A.12	-1	Laser Electronics Adjuster	0487
		26	01	2.A.12	-1	Laser Electronics Remover	0488
3	Don protective eyeglasses	27	01	4.E.03	-1	Protective Eyeglasses Donner	0491
4	Launch subsatellite	10	01	4.F.01	-2	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-1.0-05-1	
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT:						MISSION MODE: A	
1.0 Optical Frequency Demonstration						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Terminate experiments	16	01	2.A.12	-1	Laser Control Deactuator	0490
		16	01	2.B.03	-1	Laser Control Deactuator	0490

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-1.0-06-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 1.0 Optical Frequency Demonstration				MISSION MODE: A				
				BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION	TITLE				NO.		
6	Observe collection of data (monitor signal/noise ratios, pointings, data rates, and accuracy)	01	01	2.A.12		Laser Operating Status Monitor	0492	
7	Monitor tracking system error signals	01	01	2.B.03		Laser Tracking Signal Monitor	0494	
8	Manually override tracking system	10	01	2.B.03		Laser Tracking System Controller	0495	
9	Provide tracking manually	10	01	2.B.03		Laser Tracking System Controller	0495	
10	Evaluate results shown by collected data	11	01	3.K.01		Laser Communication Data Evaluator	0493	

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Millimeter-Wave Communication System and
Propagation Demonstration

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE A-2.0-04-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration			MISSION MODE: A				
			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Reconfigure transmitter equipment	20	01	2.A.12	-4	Radio Transmitter Assembler	0496
		21	01	2.A.12	-4	Radio Transmitter Disassembler	0497
		26	01	2.A.12	-4	Radio Transmitter Module Remover	0498
		27	01	2.A.12	-4	Radio Transmitter Module Installer	0499
6	Reconfigure receiver equipment	20	01	2.A.12	-5	Radio Receiver Assembler	0500
		21	01	2.A.12	-5	Radio Receiver Disassembler	0501
		26	01	2.A.12	-5	Radio Receiver Module Remover	0502
		27	01	2.A.12	-5	Radio Receiver Module Installer	0503
7	Reconfigure antennas and antenna feeds	20	02	2.A.12	-3	Radio Antenna Assembler	0504
		21	02	2.A.12	-3	Radio Antenna Disassembler	0505
		26	02	2.A.12	-3	Radio Antenna Module Remover	0506
		27	02	2.A.12	-3	Radio Antenna Module Installer	0507
		20	02	5.H		Radio Antenna Assembler	0504
		21	02	5.H		Radio Antenna Disassembler	0505
		26	02	5.H		Radio Antenna Module Remover	0506
		27	02	5.H		Radio Antenna Module Installer	0507
		20	02	4.E.02		Radio Antenna Assembler	0504
		21	02	4.E.02		Radio Antenna Disassembler	0505
		26	02	4.E.02		Radio Antenna Module Remover	0506
		27	02	4.E.02		Radio Antenna Module Installer	0507
11	Deploy antennas (semi-automatic)	15	01	2.A.12	-3	Radio Antenna Deployment Control Actuator	0508
		15	01	2.B.03	-3	Radio Antenna Deployment Control Actuator	0508

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE A-2.0-04-2
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Deploy antennas (manually)	22	01	2.A.12		Radio Antenna Translocator	0509
		27	01	2.A.12		Radio Antenna Installer	0510
		22	02	5.H		Radio Antenna Translocator	0509
		27	02	5.H		Radio Antenna Installer	0510
		22	02	4.E.02		Radio Antenna Translocator	0509
		27	02	4.E.02		Radio Antenna Installer	0510
14	Calibrate receivers	08	01	2.A.12	-5	Radio Receiver Calibrator	0511
		08	01	4.C.01		" " "	0511
15	Vary transmitter/receiver frequencies	15	01	2.A.12	-5	Radio Frequency Control Actuator	0512
		15	01	2.A.12	-4	" " " "	0512
		15	01	2.B.03	-3	" " " "	0512
18	Plan new test configurations	13	01	2.A.12	-4	MW Communications Research Planner	0513
		13	01	2.B.03	-3	MW Communications Research Planner	0513
		13	01	2.A.12	-5	MW Communications Research Planner	0513
		13	01	2.A.12	-3	MW Communications Research Planner	0513

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-2.0-05-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration							MISSION MODE: A	
							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
19	Terminate	experiments	16	01	2.B.03	-3	Radio Transceiver Control Deactuator	0514
			16	01	2.A.12	-3	Radio Transceiver Control Deactuator	0514
			16	01	2.A.12	-4	Radio Transceiver Control Deactuator	0514
			16	01	2.A.12	-5	Radio Transceiver Control Deactuator	0514

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-2.0-06-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
8	Assess meteorological conditions	04	01	5.I.01		Meteorological Condition Determiner	0515	
9	Acquire narrow antenna beams	10(30)	01	2.A.12	-3	Radio Antenna Pointing Controller	0517	
		10(30)	01	2.B.03	-3	" " " "	0517	
		10(30)	01	3.K.02	-1	" " " "	0517	
		10(30)	01	3.K.02	-2	" " " "	0517	
10	Track narrow antenna beams	10(30)	01	2.A.12		Radio Antenna Pointing Controller	0517	
		10(30)	01	2.B.03	-3	" " " "	0517	
		10(30)	01	3.K.02	-1	" " " "	0517	
		10(30)	01	3.K.02	-2	" " " "	0517	
13	Aim telescope to terrestrial receivers	10	01	2.A.01	-4	Telescope Controller	0337	
		10	01	2.B.03	-3	" "	0337	
16	Evaluate collected data	11	01	3.K.02	-1	MW Communications Data Evaluator	0518	
		11	01	3.K.02	-2	" " " "	0518	
17	Photograph weather patterns	02	01	5.I.01		Meteorological Condition Observer	0516	
		10	01	2.A.17		Camera Controller	0335	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1		
							PAGE A-2.0-09-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						MISSION MODE: A			
						BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.		DESCRIPTION					TITLE	NO.	
1	Maintain	transmitter equipment	20	01	2.A.12	-4	Radio Transmitter Assembler	0496	
			21	01	2.A.12	-4	Radio Transmitter Disassembler	0497	
			26	01	2.A.12	-4	Radio Transmitter Module Remover	0498	
			27	01	2.A.12	-4	Radio Transmitter Module Installer	0499	
2	Maintain	receiver equipment	20	01	2.A.12	-5	Radio Receiver Assembler	0500	
			21	01	2.A.12	-5	Radio Receiver Disassembler	0501	
			26	01	2.A.12	-5	Radio Receiver Module Remover	0502	
			27	01	2.A.12	-5	Radio Receiver Module Installer	0503	
3	Maintain	data processing equipment	26	01	4.B.01		Computer Module Remover	0519	
			27	01	4.B.01		Computer Module Installer	0520	
4	Maintain	antennas and antenna feeds	20	02	2.A.12	-3	Radio Antenna Assembler	0504	
			21	02	2.A.12	-3	Radio Antenna Disassembler	0505	
			26	02	2.A.12	-3	Radio Antenna Module Remover	0506	
			27	02	2.A.12	-3	Radio Antenna Module Installer	0507	
			20	02	5.H		Radio Antenna Assembler	0504	
			21	02	5.H		Radio Antenna Disassembler	0505	
			26	02	5.H		Radio Antenna Module Remover	0506	
			27	02	5.H		Radio Antenna Module Installer	0507	
			20	02	4.E.02		Radio Antenna Assembler	0504	
			21	02	4.E.02		Radio Antenna Disassembler	0505	
			26	02	4.E.02		Radio Antenna Module Remover	0506	
			27	02	4.E.02		Radio Antenna Module Installer	0507	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-2.0-10-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						MISSION MODE: A		
						BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
1	Maintain transmitter equipment	07	01	2.A.12	-4	Radio Transmitter Fault Identifier	0521	
		20	01	2.A.12	-4	Radio Transmitter Assembler	0496	
		21	01	2.A.12	-4	Radio Transmitter Disassembler	0497	
		26	01	2.A.12	-4	Radio Transmitter Module Remover	0498	
		27	01	2.A.12	-4	Radio Transmitter Module Installer	0499	
		28	01	2.A.12	-4	Radio Transmitter Repairer	0542	
		07	01	2.B.03	-3	Radio Transmitter Fault Identifier	0521	
		07	01	4.C.06		" " " "	0521	
2	Maintain receiver equipment	07	01	2.A.12	-5	Radio Receiver Fault Identifier	0522	
		20	01	2.A.12	-5	Radio Receiver Assembler	0500	
		21	01	2.A.12	-5	Radio Receiver Disassembler	0501	
		26	01	2.A.12	-5	Radio Receiver Module Remover	0502	
		27	01	2.A.12	-5	Radio Receiver Module Installer	0503	
		28	01	2.A.12	-5	Radio Receiver Repairer	0543	
		07	01	2.B.03	-3	Radio Receiver Fault Identifier	0522	
		07	01	4.C.06		" " " "	0522	
3	Maintain data processing equipment	07	01	4.B.01		Computer Fault Identifier	0523	
		26	01	4.B.01		Computer Module Remover	0519	
		27	01	4.B.01		Computer Module Installer	0520	
		28	01	4.B.01		Computer Repairer	0540	
		07	01	4.C.02		Computer Fault Identifier	0523	
4	Maintain antennas and antenna feeds	07	02	2.A.12	-3	Radio Antenna Fault Identifier	0524	
		20	02	2.A.12	-3	Radio Antenna Assembler	0504	
		21	02	2.A.12	-3	Radio Antenna Disassembler	0505	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-2.0-10-2	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	26	02	2.A.12	-3	Radio Antenna Module Remover	0506
		27	02	2.A.12	-3	Radio Antenna Module Installer	0507
		28	02	2.A.12	-3	Radio Antenna Repairer	0544
		07	02	4.C.06		Radio Antenna Fault Identifier	0524
		07	02	2.B.03	-3	" " " "	0524
		07	02	4.E.02		" " " "	0524
		20	02	4.E.02		Radio Antenna Assembler	0504
		21	02	4.E.02		Radio Antenna Disassembler	0505
		26	02	4.E.02		Radio Antenna Module Remover	0506
		27	02	4.E.02		Radio Antenna Module Installer	0507
		20	02	4.E.02		Radio Antenna Repairer	0544
		07	02	5.H		Radio Antenna Fault Identifier	0524
		20	02	5.H		Radio Antenna Assembler	0504
		21	02	5.H		Radio Antenna Disassembler	0505
		26	02	5.H		Radio Antenna Module Remover	0506
		27	02	5.H		Radio Antenna Module Installer	0507
		28	02	5.H		Radio Antenna Repairer	0544

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Surveillance and Search and Rescue Systems
Demonstration

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-3.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration						MISSION MODE: A		
			BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
1	Configure experiment equipment	20	01	2.A.12	-6	Radio Transponder Assembler	0525	
		20	01	2.A.12	-7	Interferometer Antenna Array Assembler	0526	
2	Setup experiment equipment	27	01	2.A.12	-6	Radio Transponder Installer	0527	
		27	01	2.A.12	-7	Interferometer Antenna Array Installer	0530	
4	Calibrate equipment	08	01	2.A.12	-6	Radio Transponder Calibrator	0528	
		08	01	2.B.03	-4	" " "	0528	
5	Reconfigure equipment for other tests	20	01	2.A.12	-6	Radio Transponder Assembler	0525	
		21	01	2.A.12	-6	Radio Transponder Disassembler	0529	
		20	01	2.A.12	-7	Interferometer Antenna Array Assembler	0526	
		21	01	2.A.12	-7	Interferometer Antenna Array Disassembler	0531	
7	Launch subsatellite	10	01	4.F.01	-3	Comm/Nav Subsatellite Launch Controller	0489	
		10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489	

SERIES C/N-1

PAGE A-3,0-05-1

EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration

MISSION MODE: A

BASIC FUNCTION:	05 Experiment Shutdown
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CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Terminate experiment	16	01	2.A.12	-6	Radio Transponder Control Deactuator	0532
		16	01	2.B.03	-4	Radio Transponder Control Deactuator	0532

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-3.0-06-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility								
EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION	TITLE				NO.		
3	Monitor equipment for nominal operation	01	01	2.A.12	-6	Radio Transponder Operating Status Monitor	0533	
		01	01	2.B.03	-4	Radio Transponder Operating Status Monitor	0533	
6	Observe results of on-board data processing	01	01	2.A.12	-6	Surveillance/S&R Data Processing Monitor	0534	
		01	01	2.B.03	-4	Surveillance/S&R Data Processing Monitor	0534	
		01	01	4.B.01		Surveillance/S&R Data Processing Monitor	0534	
10	Evaluate results shown by collected data	11	01	3.K.03		Surveillance/S&R Data Evaluator	0535	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-3.0-10-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
9	Repair failed equipment	28	01	2.A.12	-6	Radio Transponder Repairer	0536
		28	01	2.B.03	-4	Comm/Nav C/D Equipment Repairer	0537
		28	01	2.A.12	-7	Interferometer Antenna Array Repairer	0541
		28	01	4.F.01	-3	Comm/Nav Subsatellite Repairer	0538
		28	01	2.B.03	-2	Comm/Nav Subsatellite C/D Equipment Repairer	0539
		28	01	4.B.01		Computer Repairer	0540

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

4.0 Satellite Navigation Techniques for
Terrestrial Users

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-4.0-04-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: A	
EXPERIMENT: 4.0 Satellite Navigation Techniques for Terrestrial Users						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Configure equipment for each test	20	01	2.A.12	-8	Radio Transmitter Assembler	0496
		21	01	2.A.12	-8	Radio Transmitter Disassembler	0497
		26	01	2.A.12	-8	Radio Transmitter Module Remover	0498
		27	01	2.A.12	-8	Radio Transmitter Module Installer	0499
		26	01	2.B.03	-5	Comm/Nav C/D Equipment Module Remover	0545
		27	01	2.B.03	-5	Comm/Nav C/D Equipment Module Installer	0546
		20	01	2.A.12	-9	Radar Transmitter Assembler	0612
		21	01	2.A.12	-9	Radar Transmitter Disassembler	0618
		26	01	2.A.12	-9	Radar Transmitter Module Remover	0615
		27	01	2.A.12	-9	Radar Transmitter Module Installer	0616
		20	01	2.A.12	-12	Radio Antenna Assembler	0504
		21	01	2.A.12	-12	Radio Antenna Disassembler	0505
		26	01	2.A.12	-12	Radio Antenna Module Remover	0506
		27	01	2.A.12	-12	Radio Antenna Module Installer	0507
		20	01	2.A.12	-10	Radio Receiver Assembler	0500
		21	01	2.A.12	-10	Radio Receiver Disassembler	0501
		26	01	2.A.12	-10	Radio Receiver Module Remover	0502
		27	01	2.A.12	-10	Radio Receiver Module Installer	0503
		20	01	2.A.12	-11	Radar Receiver Assembler	0620
		21	01	2.A.12	-11	Radar Receiver Disassembler	0621
		26	01	2.A.12	-11	Radar Receiver Module Remover	0624
		27	01	2.A.12	-11	Radar Receiver Module Installer	0623
		26	01	2.A.12	-8	Radio Transmitter Remover	0547
		27	01	2.A.12	-8	Radio Transmitter Installer	0548
		26	01	2.A.12	-9	Radar Transmitter Remover	0617
		27	01	2.A.12	-9	Radar Transmitter Installer	0614

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-4.0-04-2	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT:						MISSION MODE: A	
4.0 Satellite Navigation Techniques for Terrestrial Users						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	26	01	2.A.12	-12	Radio Antenna Remover	0549
		27	01	2.A.12	-12	Radio Antenna Installer	0510
		26	01	2.A.12	-10	Radio Receiver Remover	0550
		27	01	2.A.12	-10	Radio Receiver Installer	0551
		26	01	2.A.12	-11	Radar Receiver Remover	0625
		27	01	2.A.12	-11	Radar Receiver Installer	0622
		26	01	2.C.17		Code Generator Remover	0552
		27	01	2.C.17		Code Generator Installer	0553
		26	01	2.A.12	-13	Frequency Synthesizer Remover	0554
		27	01	2.A.12	-13	Frequency Synthesizer Installer	0555
		26	01	2.C.18		Precision Clock Remover	0556
		27	01	2.C.18		Precision Clock Installer	0557
2	Configure subsatellite involved in each test	26	01	4.F.01	-1	Comm/Nav Subsatellite Module Remover	0558
		27	01	4.F.01	-1	Comm/Nav Subsatellite Module Installer	0559
		09	01	4.F.01	-1	Comm/Nav Subsatellite Module Aligner	0560
3	Calibrate antennas and transmitter power	08	01	2.A.12	-12	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.A.12	-8	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.A.12	-9	Radar Antenna-Transmitter Calibrator	0807
		08	01	2.B.03	-5	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.B.03	-5	Radar Antenna-Transmitter Calibrator	0807

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
DISCIPLINE: Communications/Navigation						PAGE A-4.0-04-3	
EXPERIMENT: 4.0 Satellite Navigation Techniques for Terrestrial Users						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Deploy subsatellite	10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-5	Comm/Nav Subsatellite Launch Controller	0489
		10	01	4.F.01	-1	Comm/Nav Subsatellite Launch Controller	0489
7	Turn on equipment	15	01	2.B.03	-5	Radio Transmitter Power Control Actuator	0562
		15	01	2.A.12	-8	Radio Transmitter Power Control Actuator	0562
		15	01	2.A.12	-9	Radar Transmitter Power Control Actuator	0808
		15	01	2.B.03	-5	Radio Receiver Power Control Actuator	0563
		15	01	2.A.12	-10	Radio Receiver Power Control Actuator	0563
		15	01	2.A.12	-11	Radar Receiver Power Control Actuator	0809
		15	01	2.B.03	-5	Radar Receiver Power Control Actuator	0809
		15	01	2.B.03	-5	Radar Transmitter Power Control Actuator	0808

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-4.0-05-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:						MISSION MODE: A	
4.0 Satellite Navigation Techniques for Terrestrial Users				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Secure equipment following tests	17	01	2.A.12	-8	Radio Transmitter Stower	0564
		17	01	2.A.12	-9	Radar Transmitter Stower	0619
		17	01	2.A.12	-10	Radio Receiver Stower	0565
		17	01	2.A.12	-11	Radar Receiver Stower	0626
		17	01	2.A.12	-12	Radio Antenna Stower	0566
		17	01	2.A.12	-13	Frequency Synthesizer Stower	0567
		17	01	2.C.17		Code Generator Stower	0568
		17	01	2.C.18		Precision Clock Stower	0569
		17	01	4.F.01	-1	Comm/Nav Subsatellite Stower	0570
9	Terminate experiments	16	01	2.B.03	-5	Radio Transmitter Power Control Deactuator	0571
		16	01	2.A.12	-8	Radio Transmitter Power Control Deactuator	0571
		16	01	2.A.12	-9	Radar Transmitter Power Control Deactuator	0810
		16	01	2.B.03	-5	Radio Receiver Power Control Deactuator	0572
		16	01	2.A.12	-10	Radio Receiver Power Control Deactuator	0572
		16	01	2.A.12	-11	Radar Receiver Power Control Deactuator	0811
		16	01	2.B.03	-5	Radar Transmitter Power Control Deactuator	0810
		16	01	2.B.03	-5	Radar Receiver Power Control Deactuator	0811

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-4.0-06-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility								
EXPERIMENT: 4.0 Satellite Navigation Techniques for Terrestrial Users							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
5	Control	subsatellites	10	01	4.F.01	-1	Comm/Nav Subsatellite Flight Controller	0573
			10	01	2.B.03	-2	Comm/Nav Subsatellite Flight Controller	0573
6	Monitor	nominal operation of transmitters	01	01	2.B.03	-5	Radio Transmitter Operation Monitor	0574
			01	01	2.A.12	-8	Radio Transmitter Operation Monitor	0574
			01	01	2.A.12	-9	Radar Transmitter Operation Monitor	0812
			01	01	2.B.03	-5	Radar Transmitter Operation Monitor	0812

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-4.0-10-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:						MISSION MODE: A	
4.0 Satellite Navigation Techniques for Terrestrial Users					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
10	Repair failed equipment	07	01	2.B.03	-2	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	2.B.03	-5	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	2.A.12	-8	Radio Transmitter Fault Identifier	0521
		07	01	2.A.12	-9	Radar Transmitter Fault Identifier	0683
		07	01	2.A.12	-10	Radio Receiver Fault Identifier	0522
		07	01	2.A.12	-11	Radar Receiver Fault Identifier	0685
		07	01	2.A.12	-12	Radio Antenna Fault Identifier	0524
		07	01	2.A.12	-13	Frequency Synthesizer Fault Identifier	0576
		07	01	2.C.17		Code Generator Fault Identifier	0578
		07	01	2.C.18		Precision Clock Fault Identifier	0580
		07	01	4.F.01	-1	Comm/Nav Subsattellite Fault Identifier	0582
		28	01	2.B.03	-2	Comm/Nav C/D Equipment Repairer	0537
		28	01	2.B.03	-5	" " " " "	0537
		28	01	2.A.12	-8	Radio Transmitter Repairer	0542
		28	01	2.A.12	-9	Radar Transmitter Repairer	0684
		28	01	2.A.12	-10	Radio Receiver Repairer	0543
		28	01	2.A.12	-11	Radar Receiver Repairer	0686
		28	01	2.A.12	-12	Radio Antenna Repairer	0544
		28	01	2.A.12	-13	Frequency Synthesizer Repairer	0577
		28	01	2.C.17		Code Generator Repairer	0579
		28	01	2.C.18		Precision Clock Repairer	0581
		28	01	4.F.01	-1	Comm/Nav Subsattellite Repairer	0538

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

5.0 On-Board Laser Ranging

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-5.0-04-1	
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT:						MISSION MODE: A	
5.0 On-Board Laser Ranging						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Launch subsatellites	10	01	4.F.01	-4	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489
9	Reconfigure experiment equipment	20	01	2.A.12	-14	Laser Transmitter Assembler	0583
		21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
		26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
		26	01	2.A.12	-14	Laser Transmitter Remover	0587
		27	01	2.A.12	-14	Laser Transmitter Installer	0588
		20	01	2.A.12	-15	Laser Receiver Assembler	0589
		21	01	2.A.12	-15	Laser Receiver Disassembler	0590
		26	01	2.A.12	-15	Laser Receiver Module Remover	0591
		27	01	2.A.12	-15	Laser Receiver Module Installer	0592
		26	01	2.A.12	-15	Laser Receiver Remover	0593
		27	01	2.A.12	-15	Laser Receiver Installer	0594
		26	01	2.B.03	-2	Comm/Nav C/D Equipment Module Remover	0595
		27	01	2.B.03	-2	Comm/Nav C/D Equipment Module Installer	0596
		26	01	2.B.03	-6	Comm/Nav C/D Equipment Module Remover	0595
		27	01	2.B.03	-6	Comm/Nav C/D Equipment Module Installer	0596
		26	01	4.F.01	-4	Comm/Nav C/D Subsatellite Module Remover	0558
		27	01	4.F.01	-4	Comm/Nav C/D Subsatellite Module Installer	0559

FLIGHT EXPERIMENT TASK-SKILLS

SERIES C/N-1

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DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility

EXPERIMENT: 5.0 On-Board Laser Ranging MISSION MODE: A

BASIC FUNCTION: 05 Experiment Shutdown

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Terminate experiments	16	01	2.B.03	-6	Laser Transmitter Control Deactuator	0597
		16	01	2.A.12	-14	Laser Transmitter Control Deactuator	0597
		16	01	2.B.03	-6	Laser Receiver Control Deactuator	0598
		16	01	2.A.12	-15	" " " "	0598

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-5.0-06-1	
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT:						MISSION MODE: A	
5.0 On-Board Laser Ranging						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Don protective eyeglasses	27	01	4.E.03	-1	Protective Eyeglasses Donner	0491
2	Aim laser at space targets	10	01	2.A.12	-14	Laser Transmitter Controller	0599
		10	01	3.K.04		" " "	0599
		10	01	2.B.03	-6	" " "	0599
		10	01	5.B		" " "	0599
3	Visually acquire space targets	02	01	3.K.04		Laser Radar Target Observer	0600
		02	01	5.B		" " " "	0600
4	Examine altitude profiles generated	11	01	2.A.12	-14	Laser Radar Data Evaluator	0601
		11	01	3.K.04		" " " "	0601
		11	01	2.B.03	-6	" " " "	0601
		11	01	2.A.12	-15	" " " "	0601
5	Map-match altitude profiles to topography	02	01	2.B.03	-6	Laser Radar Display Observer	0602
		02	01	2.C.01	-1	Map Observer	0603
		04	01	2.C.01	-1	Topographic Map-Match Determiner	0604
		04	01	2.B.03	-6	" " " "	0604
		04	01	3.C.01		" " " "	0604
		04	01	3.K.04		" " " "	0604

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-5.0-09-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 5.0 On-Board Laser Ranging			MISSION MODE: A				
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Maintain Laser Subsystem	08	01	2.A.12	-14	Laser Transmitter Calibrator	0605
		19	01	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
		20	01	2.A.12	-14	Laser Transmitter Assembler	0583
		21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
		26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
		19	02	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
		26	02	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	02	2.A.12	-14	Laser Transmitter Module Installer	0586
		19	02	5.H		Laser Transmitter Optics Cleaner	0606
		26	02	5.H		Laser Transmitter Module Remover	0585
		27	02	5.H		Laser Transmitter Module Installer	0586
		7	Maintain Electronics Subsystems	20	01	2.A.12	-14
20	01			2.A.12	-15	Laser Receiver Assembler	0589
21	01			2.A.12	-14	Laser Transmitter Disassembler	0584
21	01			2.A.12	-15	Laser Receiver Disassembler	0590
26	01			2.B.03	-6	Comm/Nav C/D Equipment Module Remover	0595
27	01			2.B.03	-6	Comm/Nav C/D Equipment Module Installer	0596
26	01			2.A.12	-14	Laser Transmitter Module Remover	0585
27	01			2.A.12	-14	Laser Transmitter Module Installer	0586
26	01			2.A.12	-15	Laser Receiver Module Remover	0591
27	01			2.A.12	-15	Laser Receiver Module Installer	0592
26	01			4.F.01	-4	Comm/Nav Subsatellite Module Remover	0558
27	01			4.F.01	-4	Comm/Nav Subsatellite Module Installer	0559

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE A-5.0-10-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:						MISSION MODE: A		
5.0 On-Board Laser Ranging						BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
6		Maintain Laser Subsystem	07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
			08	01	2.A.12	-14	Laser Transmitter Calibrator	0605
			19	01	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
			20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
			26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
			07	02	2.A.12	-14	Laser Transmitter Fault Identifier	0607
			19	02	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
			26	02	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	02	2.A.12	-14	Laser Transmitter Module Installer	0586
			07	02	5.H		Laser Transmitter Fault Identifier	0607
			19	02	5.H		Laser Transmitter Optics Cleaner	0606
			26	02	5.H		Laser Transmitter Module Remover	0585
			27	02	5.H		Laser Transmitter Module Installer	0586
7		Maintain Electronics Subsystem	07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
			20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
			26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
			07	01	2.B.03	-6	Comm/Nav C/D Equipment Fault Identifier	0575
			26	01	2.B.03	-6	Comm/Nav C/D Equipment Module Remover	0595
			27	01	2.B.03	-6	Comm/Nav C/D Equipment Module Installer	0596
			07	01	2.A.12	-15	Laser Receiver Fault Identifier	0608

FLIGHT EXPERIMENT TASK-SKILLS

SERIES C/N-1

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DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility

EXPERIMENT: MISSION MODE: A

5.0 On-Board Laser Ranging

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	20	01	2.A.12	-15	Laser Receiver Assembler	0589
		21	01	2.A.12	-15	Laser Receiver Disassembler	0590
		26	01	2.A.12	-15	Laser Receiver Module Remover	0591
		27	01	2.A.12	-15	Laser Receiver Module Installer	0592
		07	01	4.F.01	-4	Comm/Nav Subsatellite Fault Identifier	0582
		26	01	4.F.01	-4	Comm/Nav Subsatellite Module Remover	0558
		27	01	4.F.01	-4	Comm/Nav Subsatellite Module Installer	0559

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

6.0 Autonomous Navigation Systems for Space

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE A-6.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:			MISSION MODE: A					
6.0 Autonomous Navigation Systems for Space						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
1	Program	general purpose computer	13	01	4.B.01	Computer Program Determiner	0609	
			13	01	3.L.01	" " "	0609	
			10	01	4.B.01	Computer Program Controller	0610	
2	Setup selected sensors		18	01	2.A.12	-16	Radar Transmitter Unstower	0611
			20	01	2.A.12	-16	Radar Transmitter Assembler	0612
			14	01	2.A.12	-16	Radar Transmitter Tester	0613
			27	01	2.A.12	-16	Radar Transmitter Installer	0614
			18	01	2.A.12	-17	Radar Receiver Unstower	0628
			20	01	2.A.12	-17	Radar Receiver Assembler	0620
			14	01	2.A.12	-17	Radar Receiver Tester	0627
			27	01	2.A.12	-17	Radar Receiver Installer	0622
			18	01	2.A.12	-14	Laser Transmitter Unstower	0629
			20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			14	01	2.A.12	-14	Laser Transmitter Tester	0630
			27	01	2.A.12	-14	Laser Transmitter Installer	0588
			18	01	2.A.12	-15	Laser Receiver Unstower	0631
			20	01	2.A.12	-15	Laser Receiver Assembler	0589
			14	01	2.A.12	-15	Laser Receiver Tester	0632
			27	01	2.A.12	-15	Laser Receiver Installer	0594
			18	01	2.A.04		TV Camera Unstower	0054
			14	01	2.A.04		TV Camera Tester	0633
			27	01	2.A.04		TV Camera Installer	0306
			18	01	2.A.21	-1	Radiometer Unstower	0642
			20	01	2.A.21	-1	Radiometer Assembler	0634
			14	01	2.A.21	-1	Radiometer Tester	0641
			27	01	2.A.21	-1	Radiometer Installer	0636
			18	01	2.E.02		Star Tracker Unstower	0291
			20	01	2.E.02		Star Tracker Assembler	0643

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-6.0-04-2
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
2	(Continued)	14	01	2.E.02	Star Tracker Tester	0646
		27	01	2.E.02	Star Tracker Installer	0305
		18	01	2.C.19	Inertial Navigation Sensor Unstower	0651
		14	01	2.C.19	Inertial Navigation Sensor Tester	0650
		27	01	2.C.19	Inertial Navigation Sensor Installer	0647
		18	01	2.A.45	Magnetostatic Device Unstower	0660
		20	01	2.A.45	Magnetostatic Device Assembler	0652
		14	01	2.A.45	Magnetostatic Device Tester	0659
		27	01	2.A.45	Magnetostatic Device Installer	0654
		14	01	4.C.03	Laser Transmitter Tester	0630
		14	01	4.C.03	Laser Receiver Tester	0632
		14	01	4.C.04	Radar Transmitter Tester	0613
		14	01	4.C.04	Radar Receiver Tester	0627
		14	01	4.C.02	Electronic Instruments Tester	0106
		27	02	2.A.12	Radar Transmitter Installer	0614
		27	02	4.E.02	" " "	0614
		27	02	5.H	" " "	0614
				-16		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-04-3	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	27	02	2.A.12	-14	Laser Transmitter Installer	0588
		27	02	4.E.02		" " "	0588
		27	02	5.H		" " "	0588
		27	02	2.A.12	-15	Laser Receiver Installer	0594
		27	02	4.E.02		" " "	0594
		27	02	5.H		" " "	0594
5	Reconfigure experiment equipment	26	01	2.B.03	-7	Comm/Nav C/D Equipment Module Remover	0595
		27	01	2.B.03	-7	Comm/Nav C/D Equipment Module Installer	0596
		26	01	2.A.12	-16	Radar Transmitter Module Remover	0615
		27	01	2.A.12	-16	Radar Transmitter Module Installer	0616
		14	01	2.A.12	-16	Radar Transmitter Tester	0613
		27	01	2.A.12	-16	Radar Transmitter Installer	0614
		26	01	2.A.12	-17	Radar Receiver Module Remover	0624
		27	01	2.A.12	-17	Radar Receiver Module Installer	0623
		14	01	2.A.12	-17	Radar Receiver Tester	0627
		27	01	2.A.12	-17	Radar Receiver Installer	0622
		26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
		14	01	2.A.12	-14	Laser Transmitter Tester	0630
		27	01	2.A.12	-14	Laser Transmitter Installer	0588
		26	01	2.A.12	-16	Radar Transmitter Remover	0617
		26	02	2.A.12	-16	" " "	0617
		26	02	4.E.02		" " "	0617
		26	02	5.H		" " "	0617
		26	01	2.A.12	-17	Radar Receiver Remover	0625
		26	02	2.A.12	-17	" " "	0625

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-04-4	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space			MISSION MODE: A				
			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
5	(Continued)	26	02	4.E.02	Radar Receiver Remover	0625	
		26	02	5.H	" " "	0625	
		26	01	2.A.12 -14	Laser Transmitter Remover	0587	
		26	02	2.A.12 -14	" " "	0587	
		26	02	4.E.02	" " "	0587	
		26	02	5.H	" " "	0587	
		26	01	2.A.12 -15	Laser Receiver Remover	0593	
		26	02	2.A.12 -15	" " "	0593	
		26	02	4.E.02	" " "	0593	
		26	02	5.H	" " "	0593	
		26	01	2.A.12 -15	Laser Receiver Module Remover	0591	
		27	01	2.A.12 -15	Laser Receiver Module Installer	0592	
		14	01	2.A.12 -15	Laser Receiver Tester	0632	
		27	01	2.A.12 -15	Laser Receiver Installer	0594	
		26	01	2.A.04	TV Camera Module Remover	0111	
		27	01	2.A.04	TV Camera Module Installer	0112	
		14	01	2.A.04	TV Camera Tester	0633	
		27	01	2.A.04	TV Camera Installer	0306	
		26	01	2.A.21 -1	Radiometer Module Remover	0638	
		27	01	2.A.21 -1	Radiometer Module Installer	0637	
		14	01	2.A.21 -1	Radiometer Tester	0641	
		27	01	2.A.21 -1	Radiometer Installer	0636	
		26	01	2.E.02	Star Tracker Module Remover	0343	
		27	01	2.E.02	Star Tracker Module Installer	0344	
		14	01	2.E.02	Star Tracker Tester	0646	
		27	01	2.E.02	Star Tracker Installer	0305	
		26	01	2.C.19	Inertial Navigation Sensor Remover	0648	
		14	01	2.C.19	Inertial Navigation Sensor Tester	0650	
		27	01	2.C.19	Inertial Navigation Sensor Installer	0647	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-6.0-04-5
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT:			MISSION MODE: A			
6.0 Autonomous Navigation Systems for Space			BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
5	(Continued)	26	01	2.A.45	Magnetostatic Device Module Remover	0656
		27	01	2.A.45	Magnetostatic Device Module Installer	0655
		14	01	2.A.45	Magnetostatic Device Tester	0659
		27	01	2.A.45	Magnetostatic Device Installer	0654
		14	01	4.C.03	Laser Transmitter Tester	0630
		14	01	4.C.03	Laser Receiver Tester	0632
		14	01	4.C.04	Radar Transmitter Tester	0613
		14	01	4.C.04	Radar Receiver Tester	0627
		14	01	4.C.02	Electronic Instruments Tester	0106
		27	02	2.A.12 -16	Radar Transmitter Installer	0614
		27	02	4.E.02	" " "	0614
		27	02	5.H	" " "	0614
		27	02	2.A.12 -17	Radar Receiver Installer	0622
		27	02	4.E.02	" " "	0622
		27	02	5.H	" " "	0622
		27	02	2.A.12 -14	Laser Transmitter Installer	0588
		27	02	4.E.02	" " "	0588
		27	02	5.H	" " "	0588
		27	02	2.A.12 -15	Laser Receiver Installer	0594
		27	02	4.E.02	" " "	0594
		27	02	5.H	" " "	0594
		26	01	2.A.04	TV Camera Remover	0661
		26	01	2.A.21 -1	Radiometer Remover	0639
		26	01	2.E.02	Star Tracker Remover	0645
		26	01	2.A.45	Magnetostatic Device Remover	0657

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE A-6.0-05-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space			MISSION MODE: A				
			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
4	Transmit results by telemetry link	15 16	01 01	4.A.01 4.A.01	Telemetry Control Actuator Telemetry Control Deactuator	0662 0663	
6	Terminate experiments	16	01	2.B.03	-7	Radar Transmitter Control Deactuator	0664
		16	01	2.A.12	-6	Radar Transmitter Control Deactuator	0664
		26	01	2.A.12	-6	Radar Transmitter Remover	0617
		22	01	2.A.12	-6	Radar Transmitter Translocator	0665
		17	01	2.A.12	-6	Radar Transmitter Stower	0619
		16	01	2.B.03	-7	Radar Receiver Control Deactuator	0666
		16	01	2.A.12	-7	" " " "	0666
		26	01	2.A.12	-7	Radar Receiver Remover	0625
		22	01	2.A.12	-7	Radar Receiver Translocator	0667
		17	01	2.A.12	-7	Radar Receiver Stower	0626
		26	02	2.A.12	-6	Radar Transmitter Remover	0617
		26	02	4.E.02		" " "	0617
		26	02	5.H		" " "	0617
		22	02	2.A.12	-6	Radar Transmitter Translocator	0665
		22	02	4.E.02		" " "	0665
		22	02	5.H		" " "	0665
		26	02	2.A.12	-7	Radar Receiver Remover	0625
		26	02	4.E.02		" " "	0625
		26	02	5.H		" " "	0625
		22	02	2.A.12	-7	Radar Receiver Translocator	0667
		22	02	4.E.02		" " "	0667
		22	02	5.H		" " "	0667
		16	01	2.B.03	-7	Laser Transmitter Control Deactuator	0597

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-05-2	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space			MISSION MODE: A				
			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
6	(Continued)		16	01	2.A.12 -14	Laser Transmitter Control Deactuator	0597
			26	01	2.A.12 -14	Laser Transmitter Remover	0587
			26	02	2.A.12 -14	" " "	0587
			26	02	4.E.02	" " "	0587
			26	02	5.H	" " "	0587
			22	01	2.A.12 -14	Laser Transmitter Translocator	0668
			22	02	2.A.12 -14	" " "	0668
			22	02	4.E.02	" " "	0668
			22	02	5.H	" " "	0668
			16	01	2.B.03 -7	Laser Receiver Control Deactuator	0598
			16	01	2.A.12 -15	" " " "	0598
			26	01	2.A.12 -15	Laser Receiver Remover	0593
			26	02	2.A.12 -15	" " "	0593
			26	02	4.E.02	" " "	0593
			26	02	5.H	" " "	0593
			22	01	2.A.12 -15	Laser Receiver Translocator	0669
			22	02	2.A.12 -15	" " "	0669
			22	02	4.E.02	" " "	0669
			22	02	5.H	" " "	0669
			17	01	2.A.12 -15	Laser Receiver Stower	0670
			17	01	2.A.12 -16	Laser Transmitter Stower	0671
			16	01	2.B.03 -7	TV Camera Control Deactuator	0672
			16	01	2.A.04	" " " "	0672
			26	01	2.A.04	TV Camera Remover	0661
			22	01	2.A.04	TV Camera Translocator	0026
			17	01	2.A.04	TV Camera Stower	0064
			16	01	2.B.03 -7	Radiometer Control Deactuator	0673
			16	01	2.A.21 -1	" " "	0673
			26	01	2.A.21 -1	Radiometer Remover	0639

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-05-3	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space				MISSION MODE: A			
				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	22	01	2.A.21	-1	Radiometer Translocator	0674
		17	01	2.A.21	-1	Radiometer Stower	0640
		16	01	2.B.03	-7	Star Tracker Control Deactuator	0675
		16	01	2.E.02		" " " "	0675
		26	01	2.E.02		Star Tracker Remover	0645
		22	01	2.E.02		Star Tracker Translocator	0676
		17	01	2.E.02		Star Tracker Stower	0321
		16	01	2.B.03	-7	Inertial Navigation Sensor Control Deactuator	0677
		16	01	2.C.19		Inertial Navigation Sensor Control Deactuator	0677
		26	01	2.C.19		Inertial Navigation Sensor Remover	0648
		22	01	2.C.19		Inertial Navigation Sensor Translocator	0678
		17	01	2.C.19		Inertial Navigation Sensor Stower	0649
		16	01	2.B.03	-7	Magnetostatic Device Control Deactuator	0679
		16	01	2.A.45		Magnetostatic Device Control Deactuator	0679
		26	01	2.A.45		Magnetostatic Device Remover	0657
		22	01	2.A.45		Magnetostatic Device Translocator	0680
		17	01	2.A.45		Magnetostatic Device Stower	0658
		16	01	2.B.03	-7	Computer Control Deactuator	0319
		16	01	4.B.01	-2	" " "	0319
		16	01	2.B.03	-7	Comm/Nav C/D Equipment Control Deactuator	0681

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-06-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space				MISSION MODE: A			
				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
3	Compare navigation signals with reference signals	11	01	2.A.12	Navigation Signal Comparison Evaluator		0682
		11	01	2.B.03	Navigation Signal Comparison Evaluator		0682
		11	01	3.L.01	Navigation Signal Comparison Evaluator		0682

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-6.0-10-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
7	Repair failed equipment	07	01	2.A.12	-16	Radar Transmitter Fault Identifier	0683
		07	01	2.A.12	-17	Radar Receiver Fault Identifier	0685
		07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
		07	01	2.A.12	-15	Laser Receiver Fault Identifier	0608
		07	01	2.A.04		TV Camera Fault Identifier	0689
		07	01	2.A.21	-1	Radiometer Fault Identifier	0691
		07	01	2.E.02		Star Tracker Fault Identifier	0693
		07	01	2.C.19		Inertial Navigation Sensor Fault Identifier	0695
		07	01	2.A.45		Magnetostatic Device Fault Identifier	0697
		07	01	4.B.01	-2	Computer Fault Identifier	0523
		07	01	2.B.03	-7	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	4.A.01		Telemetry Equipment Fault Identifier	0699
		28	01	2.A.12	-16	Radar Transmitter Repairer	0684
		28	01	2.A.12	-17	Radar Receiver Repairer	0686
		28	01	2.A.12	-14	Laser Transmitter Repairer	0687
		28	01	2.A.12	-15	Laser Receiver Repairer	0688
		28	01	2.A.04		TV Camera Repairer	0690
		28	01	2.A.21	-1	Radiometer Repairer	0692
		28	01	2.E.02		Star Tracker Repairer	0694
		28	01	2.C.19		Inertial Navigation Sensor Repairer	0696
		28	01	2.A.45		Magnetostatic Device Repairer	0698
		28	01	4.B.01	-2	Computer Repairer	0540
		28	01	2.B.03	-7	Comm/Nav C/D Equipment Repairer	0537
		28	01	4.A.01		Telemetry Equipment Repairer	0700

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

7.0 Transmitter Breakdown Tests



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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
1	Deploy microwave test structures	18	01	2.C.20	-1	Microwave Test Structure Unstower	0774
		18	01	2.C.20	-2	" " " "	0774
		22	01	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	01	2.C.20	-2	Microwave Test Structure Translocator	0778
		22	02	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	02	2.C.20	-2	Microwave Test Structure Translocator	0778
		22	02	4.E.02		Microwave Test Structure Translocator	0778
		22	02	5.H		Microwave Test Structure Translocator	0778
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	4.E.02		Microwave Test Structure Assembler	0777
		20	02	5.H		Microwave Test Structure Assembler	0777
		27	02	2.C.20	-1	Microwave Test Structure Installer	0772
		27	02	2.C.20	-2	Microwave Test Structure Installer	0772
		27	02	1.A.01	-8	Microwave Test Structure Installer	0772
		27	02	4.E.02		Microwave Test Structure Installer	0772

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-7.0-04-2
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A			
			BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	(Continued)	27	02	5.H	Microwave Test Structure Installer	0772
		18	01	2.A.46	Optical Monitoring Device Unstower	0752
		22	01	2.A.46	Optical Monitoring Device Translocator	0754
		22	02	2.A.46	Optical Monitoring Device Translocator	0754
		22	02	4.E.02	Optical Monitoring Device Translocator	0754
		22	02	5.H	Optical Monitoring Device Translocator	0754
		27	02	2.A.46	Optical Monitoring Device Installer	0749
		27	02	4.E.02	Optical Monitoring Device Installer	0749
		27	02	5.H	Optical Monitoring Device Installer	0749
		18	01	2.A.47 -1	Pressure Monitoring Device Unstower	0744
		22	01	2.A.47 -1	Pressure Monitoring Device Translocator	0746
		22	02	2.A.47 -1	Pressure Monitoring Device Translocator	0746
		22	02	4.E.02 -1	Pressure Monitoring Device Translocator	0746
		22	02	5.H -1	Pressure Monitoring Device Translocator	0746
		27	02	2.A.47 -1	Pressure Monitoring Device Installer	0741

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE A-7.0-04-3		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A					
			BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
1	(Continued)		27	02	2.C.20	Pressure Monitoring Device Installer	0741	
			27	02	4.E.02	Pressure Monitoring Device Installer	0741	
			27	02	5.H	Pressure Monitoring Device Installer	0741	
			18	01	2.A.03	-11	Spectrometer Unstower	0007
			22	01	2.A.03	-11	Spectrometer Translocator	0008
			22	02	2.A.03	-11	" "	0008
			22	02	4.E.02		" "	0008
			22	02	5.H		" "	0008
			27	02	2.A.03	-11	Spectrometer Installer	0006
			27	02	1.A.03	-8	" "	0006
			27	02	4.E.02		" "	0006
			27	02	5.H		" "	0006
			18	01	2.A.48		Temperature Monitoring Device Unstower	0736
			22	01	2.A.48		Temperature Monitoring Device Translocator	0738
			22	02	2.A.48		Temperature Monitoring Device Translocator	0738
			22	02	4.E.02		Temperature Monitoring Device Translocator	0738
			22	02	5.H		Temperature Monitoring Device Translocator	0738
			27	02	2.A.48		Temperature Monitoring Device Installer	0733
			27	02	2.C.20		Temperature Monitoring Device Installer	0733
			27	02	4.E.02		Temperature Monitoring Device Installer	0733

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-7.0-04-4
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT:					MISSION MODE: A	
7.0 Transmitter Breakdown Tests					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	(Continued)	27	02	5.H		Temperature Monitoring Device Installer 0733
		18	01	2.A.49		Spacecraft Plasma Probe Unstower 0728
		22	01	2.A.49		Spacecraft Plasma Probe Translocator 0730
		22	02	2.A.49		Spacecraft Plasma Probe Translocator 0730
		22	02	4.E.02		Spacecraft Plasma Probe Translocator 0730
		22	02	5.H		Spacecraft Plasma Probe Translocator 0730
		27	02	2.A.49		Spacecraft Plasma Probe Installer 0725
		27	02	1.A.03	-8	Spacecraft Plasma Probe Installer 0725
		27	02	4.E.02		Spacecraft Plasma Probe Installer 0725
		27	02	5.H		Spacecraft Plasma Probe Installer 0725
2	Deploy microwave oscillator and associated instruments	18	01	2.D.54		Microwave Transmitter Unstower 0764
		22	01	2.D.54		Microwave Transmitter Translocator 0766
		27	01	2.D.54		Microwave Transmitter Installer 0761
		18	01	2.A.50	-1	Power Monitoring Device Unstower 0710
		18	01	2.A.50	-2	" " " " 0710
		22	01	2.A.50	-1	Power Monitoring Device Translocator 0712
		22	01	2.A.50	-2	Power Monitoring Device Translocator 0712

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE A-7.0-04-5		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:						MISSION MODE: A		
7.0 Transmitter Breakdown Tests			BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
2	(Continued)		27	01	2.A.50	-1	Power Monitoring Device Installer	0707
			27	01	2.A.50	-2	" " " "	0707
			27	01	2.D.54		" " " "	0707
			27	01	2.C.20		" " " "	0707
			18	01	2.D.55		Waveform Modulator Unstower	0720
			22	01	2.D.55		Waveform Modulator Translocator	0722
			27	01	2.D.55		Waveform Modulator Installer	0717
			27	01	2.D.54		" " " "	0717
			27	01	2.B.03	-9	" " " "	0717
5	Reconfigure experiment equipment		21	02	2.C.20	-1	Microwave Test Structure Disassembler	0776
			21	02	2.C.20	-2	Microwave Test Structure Disassembler	0776
			21	02	4.E.02		Microwave Test Structure Disassembler	0776
			21	02	5.H		Microwave Test Structure Disassembler	0776
			20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
			20	02	2.C.20	-2	" " " "	0777
			20	02	4.E.02		" " " "	0777
			20	02	5.H		" " " "	0777
			26	02	2.C.20	-1	Microwave Test Structure Remover	0773
			26	02	2.C.20	-2	" " " "	0773
			26	02	4.E.02		" " " "	0773
			26	02	5.H		" " " "	0773
			27	02	2.C.20	-1	Microwave Test Structure Installer	0772
			27	02	2.C.20	-2	" " " "	0772
			27	02	4.E.02		" " " "	0772
			27	02	5.H		" " " "	0772

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-04-6	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:						MISSION MODE: A	
7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
5	(Continued)	26	02	2.C.20	-1	Microwave Test Structure Module Remover	0771
		26	02	2.C.20	-2	Microwave Test Structure Module Remover	0771
		26	02	4.E.02		Microwave Test Structure Module Remover	0771
		26	02	5.H		Microwave Test Structure Module Remover	0771
		27	02	2.C.20	-1	Microwave Test Structure Module Installer	0770
		27	02	2.C.20	-2	Microwave Test Structure Module Installer	0770
		27	02	4.E.02		Microwave Test Structure Module Installer	0770
		27	02	5.H		Microwave Test Structure Module Installer	0770
		26	02	2.A.46		Optical Monitoring Device Remover	0750
		26	02	2.C.20		" " " "	0750
		26	02	4.E.02		" " " "	0750
		26	02	5.H		" " " "	0750
		27	02	2.A.46		Optical Monitoring Device Installer	0749
		27	02	2.C.20		Optical Monitoring Device Installer	0749
		27	02	4.E.02		Optical Monitoring Device Installer	0749
		27	02	5.H		Optical Monitoring Device Installer	0749
		26	02	2.A.47	-1	Pressure Monitoring Device Remover	0742
		26	02	2.C.20		" " " "	0742
		26	02	4.E.02		" " " "	0742
		26	02	5.H		" " " "	0742

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGEA-7.0-04-7		
DISCIPLINE:		Communications/Navigation		FPE/SUBGROUP:		C/N-1 Communications/Navigation Research Facility		
EXPERIMENT:		7.0 Transmitter Breakdown Tests				MISSION MODE: A		
						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
5	(Continued)		27	02	2.A.47	-1	Pressure Monitoring Device Installer	0741
			27	02	2.C.20		Pressure Monitoring Device Installer	0741
			27	02	4.E.02		Pressure Monitoring Device Installer	0741
			27	02	5.H		Pressure Monitoring Device Installer	0741
			26	02	2.A.03	-11	Spectrometer Remover	0315
			26	02	1.A.03	-8	" "	0315
			26	02	4.E.02		" "	0315
			26	02	5.H		" "	0315
			27	02	2.A.03	-11	Spectrometer Installer	0006
			27	02	1.A.03	-8	" "	0006
			27	02	4.E.02		" "	0006
			27	02	5.H		" "	0006
			26	02	2.A.48		Temperature Monitoring Device Remover	0735
			26	02	2.C.20		Temperature Monitoring Device Remover	0735
			26	02	4.E.02		Temperature Monitoring Device Remover	0735
			26	02	5.H		Temperature Monitoring Device Remover	0735
			27	02	2.A.48		Temperature Monitoring Device Installer	0733
			27	02	2.C.20		Temperature Monitoring Device Installer	0733
			27	02	4.E.02		Temperature Monitoring Device Installer	0733
			27	02	5.H		Temperature Monitoring Device Installer	0733

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-7.0-04-8
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 7.0 Transmitter Breakdown Tests					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
5	(Continued)	26	02	2.A.49		Spacecraft Plasma Probe Remover 0726
		26	02	1.A.03	-8	" " " " 0726
		26	02	4.E.02		" " " " 0726
		26	02	5.H		" " " " 0726
		27	02	2.A.49		Spacecraft Plasma Probe Installer 0725
		27	02	1.A.03	-8	" " " " 0725
		27	02	4.E.02		" " " " 0725
		27	02	5.H		" " " " 0725
		26	01	2.D.54		Microwave Transmitter Remover 0762
		27	01	2.D.54		Microwave Transmitter Installer 0761
		26	01	2.D.54		Microwave Transmitter Module Remover 0760
		27	01	2.D.54		Microwave Transmitter Module Installer 0759
		26	01	2.A.50	-1	Power Monitoring Device Remover 0708
		26	01	2.A.50	-2	" " " " 0708
		26	01	2.D.54		" " " " 0708
		26	01	2.C.20		" " " " 0708
		27	01	2.A.50	-1	Power Monitoring Device Installer 0707
		27	01	2.A.50	-2	" " " " 0707
		27	01	2.D.54		" " " " 0707
		27	01	2.C.20		" " " " 0707
		26	01	2.D.55		Waveform Modulator Remover 0718
		26	01	2.B.03	-9	" " " " 0718
		26	01	2.D.54		" " " " 0718
		27	01	2.D.55		Waveform Modulator Installer 0717
		27	01	2.B.03	-9	" " " " 0717
		27	01	2.D.54		" " " " 0717
		26	01	2.D.55		Waveform Modulator Module Remover 0716
		27	01	2.D.55		Waveform Modulator Module Installer 0715

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
DISCIPLINE: Communications/Navigation						PAGEA-7.0-04-9	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: A	
CREW TASK STATEMENT						BASIC FUNCTION: 04 Experiment Setup	
NO.	DESCRIPTION	CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TITLE	NO.
5	(Continued)	26	01	2.B.03	-9	Comm/Nav C/D Equipment Module Remover	0558
		27	01	2.B.03	-9	Comm/Nav C/D Equipment Module Installer	0559

SERIES C/N-1

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DISCIPLINE: Communications/Navigation

FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility

EXPERIMENT:

MISSION MODE: A

7.0 Transmitter Breakdown Tests

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
5	(Continued)		26	01	2.B.03 -9	Comm/Nav C/D Equipment Module Remover	0558
			27	01	2.B.03 -9	Comm/Nav C/D Equipment Module Installer	0559

CREW
FUNCT.
NO.

OPER.
ENVIR.
NO.

DEPENDENCY
NO.

TASK - SKILL

NO.

DESCRIPTION

NO.

5

(Continued)

26

01

2.B.03

-9

Comm/Nav C/D Equipment Module
Remover

0558

27

01

2.B.03

-9

Comm/Nav C/D Equipment Module
Installer

0559

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE A-7.0-05-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A			
			BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
6	Terminate experiments	16	01	2.D.54	Microwave Transmitter Control Deactuator	0756
		16	01	2.B.03 -9	Microwave Transmitter Control Deactuator	0756
		26	01	2.D.54	Microwave Transmitter Remover	0762
		22	01	2.D.54	Microwave Transmitter Translocator	0766
		17	01	2.D.54	Microwave Transmitter Stower	0765
		16	01	2.D.55	Waveform Modulator Control Deactuator	0714
		16	01	2.B.03 -9	Waveform Modulator Control Deactuator	0714
		26	01	2.D.55	Waveform Modulator Remover	0718
		26	01	2.B.03 -9	" " "	0718
		26	01	2.D.54	" " "	0718
		17	01	2.D.55	Waveform Modulator Stower	0721
		22	01	2.D.55	Waveform Modulator Translocator	0722
		26	01	2.A.50 -1	Power Monitoring Device Remover	0708
		26	01	2.A.50 -2	" " " "	0708
		26	01	2.D.54	" " " "	0708
		26	01	2.C.20	" " " "	0708
		16	01	2.A.50 -1	Power Monitoring Device Control Deactuator	0706
		16	01	2.A.50 -2	Power Monitoring Device Control Deactuator	0706
		16	01	2.B.03 -9	Power Monitoring Device Control Deactuator	0706
		22	01	2.A.50 -1	Power Monitoring Device Translocator	0712
		22	01	2.A.50 -2	Power Monitoring Device Translocator	0712
		17	01	2.A.50 -1	Power Monitoring Device Stower	0711
		17	01	2.A.50 -2	" " " "	0711

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-05-2	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
6	(Continued)		16	01	2.B.03 -9	Comm/Nav C/D Equipment Control Deactuator	0681
			21	02	2.C.20 -1	Microwave Test Structure Disassembler	0776
			21	02	2.C.20 -2	Microwave Test Structure Disassembler	0776
			21	02	4.E.02	Microwave Test Structure Disassembler	0776
			21	02	5.H	Microwave Test Structure Disassembler	0776
			26	02	2.C.20 -1	Microwave Test Structure Remover	0773
			26	02	2.C.20 -2	" " " "	0773
			26	02	1.A.01 -8	" " " "	0773
			26	02	4.E.02	" " " "	0773
			26	02	5.H	" " " "	0773
			22	02	2.C.20 -1	Microwave Test Structure Translocator	0778
			22	02	2.C.20 -2	Microwave Test Structure Translocator	0778
			22	02	4.E.02	Microwave Test Structure Translocator	0778
			22	02	5.H	Microwave Test Structure Translocator	0778
			22	01	2.C.20 -1	Microwave Test Structure Translocator	0778
			22	01	2.C.20 -2	Microwave Test Structure Translocator	0778
			17	01	2.C.20 -1	Microwave Test Structure Stower	0775
			17	01	2.C.20 -1	" " " "	0775
			16	01	2.A.46	Optical Monitoring Device Control Deactuator	0748

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-05-3	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A				
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	16	01	2.B.03	-9	Optical Monitoring Device Control Deactuator	0748
		26	02	2.A.46		Optical Monitoring Device Remover	0750
		26	02	2.C.20		" " " "	0750
		26	02	4.E.02		" " " "	0750
		26	02	5.H		" " " "	0750
		22	02	2.A.46		Optical Monitoring Device Translocator	0754
		22	02	4.E.02		Optical Monitoring Device Translocator	0754
		22	02	5.H		Optical Monitoring Device Translocator	0754
		22	01	2.A.46		Optical Monitoring Device Translocator	0754
		22	01	4.E.02		Optical Monitoring Device Translocator	0754
		22	01	5.H		Optical Monitoring Device Translocator	0754
		17	01	2.A.46		Optical Monitoring Device Stower	0753
		16	01	2.A.47	-1	Pressure Monitoring Device Control Deactuator	0740
		16	01	2.B.03	-9	Pressure Monitoring Device Control Deactuator	0740
		26	02	2.A.47	-1	Pressure Monitoring Device Remover	0742
		26	02	2.C.20		" " " "	0742
		26	02	4.E.02		" " " "	0742
		26	02	5.H		" " " "	0742
		22	02	2.A.47	-1	Pressure Monitoring Device Translocator	0746
		22	02	4.E.02		Pressure Monitoring Device Translocator	0746

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-05-4	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A				
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
6	(Continued)		22	02	5.H	Pressure Monitoring Device Translocator	0746
			22	01	2.A.47 -1	Pressure Monitoring Device Translocator	0746
			17	01	2.A.47 -1	Pressure Monitoring Device Stower	0745
			16	01	2.A.48	Temperature Monitoring Device Control Deactuator	0732
			16	01	2.B.03 -9	Temperature Monitoring Device Control Deactuator	0732
			26	02	2.A.48	Temperature Monitoring Device Remover	0735
			26	02	2.C.20	Temperature Monitoring Device Remover	0735
			26	02	4.E.02	Temperature Monitoring Device Remover	0735
			26	02	5.H	Temperature Monitoring Device Remover	0735
			22	02	2.A.48	Temperature Monitoring Device Translocator	0738
			22	02	4.E.02	Temperature Monitoring Device Translocator	0738
			22	02	5.H	Temperature Monitoring Device Translocator	0738
			22	01	2.A.48	Temperature Monitoring Device Translocator	0738
			17	01	2.A.48	Temperature Monitoring Device Stower	0737
			16	01	2.A.03 -11	Spectrometer Control Deactuator	0409
			16	01	2.B.03 -9	" " "	0409
			26	02	2.A.03 -11	Spectrometer Remover	0315

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1		
							PAGE A-7.0-05-5		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						
EXPERIMENT:			MISSION MODE: A						
7.0 Transmitter Breakdown Tests			BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE			NO.	
6	(Continued)	26	02	1.A.03	-8	Spectrometer Remover			0315
		26	02	4.E.02		" "			0315
		26	02	5.H		" "			0315
		22	02	2.A.03	-11	Spectrometer Translocator			0008
		22	02	4.E.02		" "			0008
		22	02	5.H		" "			0008
		22	01	2.A.03	-11	" "			0008
		17	01	2.A.03	-11	Spectrometer Stower			0063
		16	01	2.A.49		Spacecraft Plasma Probe Control Deactuator			0724
		16	01	2.B.03	-9	Spacecraft Plasma Probe Control Deactuator			0724
		26	02	2.A.49		Spacecraft Plasma Probe Remover			0726
		26	02	1.A.03	-8	" " " "			0726
		26	02	4.E.02		" " " "			0726
		26	02	5.H		" " " "			0726
		22	02	2.A.49		Spacecraft Plasma Probe Translocator			0730
		22	02	4.E.02		Spacecraft Plasma Probe Translocator			0730
		22	02	5.H		Spacecraft Plasma Probe Translocator			0730
		22	01	2.A.49		Spacecraft Plasma Probe Translocator			0730
		17	01	2.A.49		Spacecraft Plasma Probe Stower			0729

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-06-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: A				
7.0 Transmitter Breakdown Tests			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Examine physical condition of experiment system	03	02	2.C.20	-1	Microwave Test Structure Inspector	0769
		03	02	2.C.20	-2	Microwave Test Structure Inspector	0769
		03	02	4.E.02		Microwave Test Structure Inspector	0769
		03	02	5.H		Microwave Test Structure Inspector	0769
		04	02	2.C.20	-1	Microwave Test Structure Condition Determiner	0768
		04	02	2.C.20	-2	Microwave Test Structure Condition Determiner	0768
		04	02	4.E.02		Microwave Test Structure Condition Determiner	0768
		04	02	5.H		Microwave Test Structure Condition Determiner	0768
		03	01	2.D.54		Microwave Transmitter Inspector	0758
		04	01	2.D.54		Microwave Transmitter Condition Determiner	0757
4	Microscopically examine inner walls of microwave test section	22	02	2.A.18		Microscope Translocator	0704
		22	02	4.E.02		" "	0704
		22	02	5.H		" "	0704
		21	02	2.C.20	-1	Microwave Test Structure Disassembler	0776
		21	02	2.C.20	-2	Microwave Test Structure Disassembler	0776
		21	02	4.E.02		Microwave Test Structure Disassembler	0776

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-06-2	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	21	02	5.H		Microwave Test Structure Disassembler	0776
		03	02	2.C.20	-1	Microwave Test Structure Inspector	0769
		03	02	2.C.20	-2	" " " "	0769
		03	02	2.A.18		" " " "	0769
		03	02	4.E.02		" " " "	0769
		03	02	5.H		" " " "	0769
		03	02	5.B.01		" " " "	0769
		04	02	2.C.20	-1	Microwave Test Structure Condition Determiner	0768
		04	02	2.C.20	-2	Microwave Test Structure Condition Determiner	0768
		04	02	2.A.18		Microwave Test Structure Condition Determiner	0768
		04	02	4.E.02		Microwave Test Structure Condition Determiner	0768
		04	02	5.H		Microwave Test Structure Condition Determiner	0768
		04	02	5.B.01		Microwave Test Structure Condition Determiner	0768
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	2.C.20	-2	Microwave Test Structure Assembler	0777
		20	02	4.E.02		Microwave Test Structure Assembler	0777
		20	02	5.H		Microwave Test Structure Assembler	0777
		18	01	2.A.18		Microscope Unstower	0702
		22	01	2.A.18		Microscope Translocator	0704
		17	01	2.A.18		Microscope Stower	0703

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE A-7.0-10-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: A	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Repair failed equipment	07	01	2.D.54		Microwave Transmitter Fault Identifier	0763
		07	01	4.C.04		Microwave Transmitter Fault Identifier	0763
		28	01	2.D.54		Microwave Transmitter Repairer	0767
		07	01	2.D.55		Waveform Modulator Fault Identifier	0719
		07	01	4.C.02		Waveform Modulator Fault Identifier	0719
		28	01	2.D.55		Waveform Modulator Repairer	0723
		07	01	2.A.46		Optical Monitoring Device Fault Identifier	0751
		07	01	4.C.02		Optical Monitoring Device Fault Identifier	0751
		07	01	4.C.07		Optical Monitoring Device Fault Identifier	0751
		28	01	2.A.46		Optical Monitoring Device Repairer	0755
		07	01	2.A.47	-1	Pressure Monitoring Device Fault Identifier	0743
		07	01	4.C.02		Pressure Monitoring Device Fault Identifier	0743
		28	01	2.A.47	-1	Pressure Monitoring Device Repairer	0747
		07	01	2.A.48		Temperature Monitoring Device Fault Identifier	0734
		07	01	4.C.02		Temperature Monitoring Device Fault Identifier	0734
		28	01	2.A.48		Temperature Monitoring Device Repairer	0739
		07	01	2.A.50	-1	Power Monitoring Device Fault Identifier	0709

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1		
							PAGE A-7.0-10-2		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation					Research Facility	
EXPERIMENT:								MISSION MODE: A	
7.0 Transmitter Breakdown Tests							BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
10	(Continued)	07	01	2.A.50	-2	Power Monitoring Device Fault Identifier	0709		
		07	01	4.C.02		Power Monitoring Device Fault Identifier	0709		
		28	01	2.A.50	-1	Power Monitoring Device Repairer	0713		
		28	01	2.A.50	-2	" " " "	0713		
		07	01	2.A.03	-11	Spectrometer Fault Identifier	0038		
		07	01	4.C.02		" " "	0038		
		28	01	2.A.03	-11	Spectrometer Fault Repairer	0779		
		07	01	2.A.49		Spacecraft Plasma Probe Fault Identifier	0727		
		07	01	4.C.02		Spacecraft Plasma Probe Fault Identifier	0727		
		28	01	2.A.49		Spacecraft Plasma Probe Repairer	0731		
		07	01	2.B.03	-9	Comm/Nav C/D Equipment Fault Identifier	0575		
		07	01	4.C.02		Comm/Nav C/D Equipment Fault Identifier	0575		
		28	01	2.B.03	-9	Comm/Nav C/D Equipment Repairer	0537		
		07	01	2.A.18		Microscope Fault Identifier	0701		
		07	01	4.C.07		" " "	0701		
		28	01	2.A.18		Microscope Repairer	0705		

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENTS:

- 1.0 Optical Frequency Demonstration
- 2.0 Millimeter-Wave Communication System and Propagation Demonstration
- 3.0 Surveillance and Search and Rescue Systems Demonstration
- 4.0 Satellite Navigation Techniques for Terrestrial Users
- 5.0 On-Board Laser Ranging
- 6.0 Autonomous Navigation Systems for Space
- 7.0 Transmitter Breakdown Tests
- 12.0 Plasma Propagation Measurements
- 13.0 Multipath Measurements

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

1.0 Optical Frequency Demonstration

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-1.0-04-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 1.0 Optical Frequency Demonstration				MISSION MODE: B			
				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Reconfigure laser optical components	09	01	2.A.12	-1	Laser Optics Aligner	0483
		26	01	2.A.12	-1	Laser Optics Remover	0485
		27	01	2.A.12	-1	Laser Optics Installer	0484
2	Reconfigure laser electronic components	27	01	2.A.12	-1	Laser Electronics Installer	0486
		09	01	2.A.12	-1	Laser Electronics Adjuster	0487
		26	01	2.A.12	-1	Laser Electronics Remover	0488
3	Don protective eyeglasses	27	01	4.E.03	-1	Protective Eyeglasses Donner	0491
4	Launch subsatellite	10	01	4.F.01	-2	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489

SERIES	C/N-1
PAGE	B-1.0-05-1

EXPERIMENT:	MISSION MODE: B
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BASIC FUNCTION:	05 Experiment Shutdown
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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

2.0 Millimeter-Wave Communication System and
Propagation Demonstration



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FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE B-2.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration							MISSION MODE: B	
			BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
5		Reconfigure transmitter equipment	20	01	2.A.12	-4	Radio Transmitter Assembler	0496
			21	01	2.A.12	-4	Radio Transmitter Disassembler	0497
			26	01	2.A.12	-4	Radio Transmitter Module Remover	0498
			27	01	2.A.12	-4	Radio Transmitter Module Installer	0499
6		Reconfigure receiver equipment	20	01	2.A.12	-5	Radio Receiver Assembler	0500
			21	01	2.A.12	-5	Radio Receiver Disassembler	0501
			26	01	2.A.12	-5	Radio Receiver Module Remover	0502
			27	01	2.A.12	-5	Radio Receiver Module Installer	0503
7		Reconfigure antennas and antenna feeds	20	02	2.A.12	-3	Radio Antenna Assembler	0504
			21	02	2.A.12	-3	Radio Antenna Disassembler	0505
			26	02	2.A.12	-3	Radio Antenna Module Remover	0506
			27	02	2.A.12	-3	Radio Antenna Module Installer	0507
			20	02	5.H		Radio Antenna Assembler	0504
			21	02	5.H		Radio Antenna Disassembler	0505
			26	02	5.H		Radio Antenna Module Remover	0506
			27	02	5.H		Radio Antenna Module Installer	0507
			20	02	4.E.02		Radio Antenna Assembler	0504
			21	02	4.E.02		Radio Antenna Disassembler	0505
			26	02	4.E.02		Radio Antenna Module Remover	0506
			27	02	4.E.02		Radio Antenna Module Installer	0507
11		Deploy antennas (semi-automatic)	15	01	2.A.12	-3	Radio Antenna Deployment Control Actuator	0508
			15	01	2.B.03	-3	Radio Antenna Deployment Control Actuator	0508

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-2.0-04-2
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B	
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Deploy antennas (manually)	22	01	2.A.12		Radio Antenna Translocator	0509
		27	01	2.A.12		Radio Antenna Installer	0510
		22	02	5.H		Radio Antenna Translocator	0509
		27	02	5.H		Radio Antenna Installer	0510
		22	02	4.E.02		Radio Antenna Translocator	0509
		27	02	4.E.02		Radio Antenna Installer	0510
14	Calibrate receivers	08	01	2.A.12	-5	Radio Receiver Calibrator	0511
		08	01	4.C.01		" " "	0511
15	Vary transmitter/receiver frequencies	15	01	2.A.12	-5	Radio Frequency Control Actuator	0512
		15	01	2.A.12	-4	" " " "	0512
		15	01	2.B.03	-3	" " " "	0512
18	Plan new test configurations	13	01	2.A.12	-4	MW Communications Research Planner	0513
		13	01	2.B.03	-3	MW Communications Research Planner	0513
		13	01	2.A.12	-5	MW Communications Research Planner	0513
		13	01	2.A.12	-3	MW Communications Research Planner	0513

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-2.0-05-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 2.0 Millimeter Wave Communication System						MISSION MODE: B	
and Propagation Demonstration						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
19	Terminate experiments	16	01	2.B.03	-3	Radio Transceiver Control Deactuator	0514
		16	01	2.A.12	-3	Radio Transceiver Control Deactuator	0514
		16	01	2.A.12	-4	Radio Transceiver Control Deactuator	0514
		16	01	2.A.12	-5	Radio Transceiver Control Deactuator	0514

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-2.0-09-1
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT: 2.0 Millimeter Wave Communication System						MISSION MODE: B	
and Propagation Demonstration						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Maintain transmitter equipment	20	01	2.A.12	-4	Radio Transmitter Assembler	0496
		21	01	2.A.12	-4	Radio Transmitter Disassembler	0497
		26	01	2.A.12	-4	Radio Transmitter Module Remover	0498
		27	01	2.A.12	-4	Radio Transmitter Module Installer	0499
2	Maintain receiver equipment	20	01	2.A.12	-5	Radio Receiver Assembler	0500
		21	01	2.A.12	-5	Radio Receiver Disassembler	0501
		26	01	2.A.12	-5	Radio Receiver Module Remover	0502
		27	01	2.A.12	-5	Radio Receiver Module Installer	0503
3	Maintain data processing equipment	26	01	4.B.01		Computer Module Remover	0519
		27	01	4.B.01		Computer Module Installer	0520
4	Maintain antennas and antenna feeds	20	01	2.A.12	-3	Radio Antenna Assembler	0504
		21	02	2.A.12	-3	Radio Antenna Disassembler	0505
		26	02	2.A.12	-3	Radio Antenna Module Remover	0506
		27	02	2.A.12	-3	Radio Antenna Module Installer	0507
		20	02	5.H		Radio Antenna Assembler	0504
		21	02	5.H		Radio Antenna Disassembler	0505
		26	02	5.H		Radio Antenna Module Remover	0506
		27	02	5.H		Radio Antenna Module Installer	0507
		20	02	4.E.02		Radio Antenna Assembler	0504
		21	02	4.E.02		Radio Antenna Disassembler	0505
		26	02	4.E.02		Radio Antenna Module Remover	0506
		27	02	4.E.02		Radio Antenna Module Installer	0507

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-2.0-10-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 2.0 Millimeter Wave Communication System and Propagation Demonstration			MISSION MODE: B				
BASIC FUNCTION: 10 Unschedule Maintenance							
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.		DESCRIPTION					TITLE NO.
1	Maintain	transmitter equipment	07	01	2.A.12	-4	Radio Transmitter Fault Identifier 0512
			20	01	2.A.12	-4	Radio Transmitter Assembler 0496
			21	01	2.A.12	-4	Radio Transmitter Disassembler 0497
			26	01	2.A.12	-4	Radio Transmitter Module Remover 0498
			27	01	2.A.12	-4	Radio Transmitter Module Installer 0499
			28	01	2.A.12	-4	Radio Transmitter Repairer 0542
			07	01	2.B.03	-3	Radio Transmitter Fault Identifier 0521
			07	01	4.C.06		" " " " 0521
2	Maintain	receiver equipment	07	01	2.A.12	-5	Radio Receiver Fault Identifier 0522
			20	01	2.A.12	-5	Radio Receiver Assembler 0500
			21	01	2.A.12	-5	Radio Receiver Disassembler 0501
			26	01	2.A.12	-5	Radio Receiver Module Remover 0502
			27	01	2.A.12	-5	Radio Receiver Module Installer 0503
			28	01	2.A.12	-5	Radio Receiver Repairer 0543
			07	01	2.B.03	-3	Radio Receiver Fault Identifier 0522
			07	01	4.C.06		" " " " 0522
3	Maintain	data processing equipment	07	01	4.B.01		Computer Fault Identifier 0523
			26	01	4.B.01		Computer Module Remover 0519
			27	01	4.B.01		Computer Module Installer 0520
			28	01	4.B.01		Computer Repairer 0540
			07	01	4.C.02		Computer Fault Identifier 0523
4	Maintain	antennas and antenna feeds	07	02	2.A.12	-3	Radio Antenna Fault Identifier 0524
			20	02	2.A.12	-3	Radio Antenna Assembler 0504
			21	02	2.A.12	-3	Radio Antenna Disassembler 0505

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-2.0-10-2
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT: 2.0 Millimeter Wave Communication System						MISSION MODE: B	
and Propagation Demonstration						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	26	02	2.A.12	-3	Radio Antenna Module Remover	0506
		27	02	2.A.12	-3	Radio Antenna Module Installer	0507
		28	02	2.A.12	-3	Radio Antenna Repairer	0544
		07	02	4.C.06		Radio Antenna Fault Identifier	0524
		07	02	2.B.03	-3	" " " "	0524
		07	02	4.E.02		" " " "	0524
		20	02	4.E.02		Radio Antenna Assembler	0504
		21	02	4.E.02		Radio Antenna Disassembler	0505
		26	02	4.E.02		Radio Antenna Module Remover	0506
		27	02	4.E.02		Radio Antenna Module Installer	0507
		20	02	4.E.02		Radio Antenna Repairer	0544
		07	02	5.H		Radio Antenna Fault Identifier	0524
		20	02	5.H		Radio Antenna Assembler	0504
		21	02	5.H		Radio Antenna Disassembler	0505
		26	02	5.H		Radio Antenna Module Remover	0506
		27	02	5.H		Radio Antenna Module Installer	0507
		28	02	5.H		Radio Antenna Repairer	0544

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

3.0 Surveillance and Search and Rescue Systems
Demonstration

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FLIGHT EXPERIMENT TASK-SKILLS										SERIES C/N-1	
										PAGE B-3.0-04-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration										MISSION MODE: B	
										BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL				
NO.		DESCRIPTION					TITLE			NO.	
1	Configure	experiment equipment	20	01	2.A.12	-6	Radio Transponder Assembler	0525			
			20	01	2.A.12	-7	Interferometer Antenna Array Assembler	0526			
2	Setup	experiment equipment	27	01	2.A.12	-6	Radio Transponder Installer	0527			
			27	01	2.A.12	-7	Interferometer Antenna Array Installer	0530			
4	Calibrate	equipment	08	01	2.A.12	-6	Radio Transponder Calibrator	0528			
			08	01	2.B.03	-4	" " "	0528			
5	Reconfigure	equipment for other tests	20	01	2.A.12	-6	Radio Transponder Assembler	0525			
			21	01	2.A.12	-6	Radio Transponder Disassembler	0529			
			20	01	2.A.12	-7	Interferometer Antenna Array Assembler	0526			
			21	01	2.A.12	-7	Interferometer Antenna Array Disassembler	0531			
7	Launch	subsattellite	10	01	4.F.01	-3	Comm/Nav Subsattellite Launch Controller	0489			
			10	01	2.B.03	-2	Comm/Nav Subsattellite Launch Controller	0489			

SERIES C/N-1

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DISCIPLINE: Communications/Navigation	FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility
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EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration

MISSION MODE: B

BASIC FUNCTION: 05 Experiment Shutdown

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Terminate experiment	16	01	2.A.12	-6	Radio Transponder Control Deactuator	0532
		16	01	2.B.03	-4	Radio Transponder Control Deactuator	0532

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-3.0-10-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 3.0 Surveillance and Search and Rescue Systems Demonstration						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Repair failed equipment	28	01	2.A.12	-6	Radio Transponder Repairer	0536
		28	01	2.B.03	-4	Comm/Nav C/D Equipment Repairer	0537
		28	01	2.A.12	-7	Interferometer Antenna Array Repairer	0541
		28	01	4.F.01	-3	Comm/Nav Subsatellite Repairer	0538
		28	01	2.B.03	-2	Comm/Nav Subsatellite C/D Equipment Repairer	0539
		28	01	4.B.01		Computer Repairer	0540

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

4.0 Satellite Navigation Techniques for
Terrestrial Users

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE B-4.0-04-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:						MISSION MODE: B		
4.0 Satellite Navigation Techniques for Terrestrial Users			BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT			CREW	OPER	DEPENDENCY		TASK - SKILL	
NO.		DESCRIPTION	FUNCT NO.	ENVIR. NO.	NO.		TITLE	NO.
1	Configure	equipment for each test	20	01	2.A.12	-8	Radio Transmitter Assembler	0496
			21	01	2.A.12	-8	Radio Transmitter Disassembler	0497
			26	01	2.A.12	-8	Radio Transmitter Module Remover	0498
			27	01	2.A.12	-8	Radio Transmitter Module Installer	0499
			26	01	2.B.03	-5	Satellite Navigation C/D Equipment Module Remover	0545
			27	01	2.B.03	-5	Satellite Navigation C/D Equipment Module Installer	0546
			20	01	2.A.12	-9	Radar Transmitter Assembler	0612
			21	01	2.A.12	-9	Radar Transmitter Disassembler	0618
			26	01	2.A.12	-9	Radar Transmitter Module Remover	0615
			27	01	2.A.12	-9	Radar Transmitter Module Installer	0616
			20	01	2.A.12	-12	Radio Antenna Assembler	0504
			21	01	2.A.12	-12	Radio Antenna Disassembler	0505
			26	01	2.A.12	-12	Radio Antenna Module Remover	0506
			27	01	2.A.12	-12	Radio Antenna Module Installer	0507
			20	01	2.A.12	-10	Radio Receiver Assembler	0500
			21	01	2.A.12	-10	Radio Receiver Disassembler	0501
			26	01	2.A.12	-10	Radio Receiver Module Remover	0502
			27	01	2.A.12	-10	Radio Receiver Module Installer	0503
			20	01	2.A.12	-11	Radar Receiver Assembler	0620
			21	01	2.A.12	-11	Radar Receiver Disassembler	0621
			26	01	2.A.12	-11	Radar Receiver Module Remover	0624
			27	01	2.A.12	-11	Radar Receiver Module Installer	0623
			26	01	2.A.12	-8	Radio Transmitter Remover	0547
			27	01	2.A.12	-8	Radio Transmitter Installer	0548
			26	01	2.A.12	-9	Radar Transmitter Remover	0617
			27	01	2.A.12	-9	Radar Transmitter Installer	0614

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-4.0-04-2
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
4.0 Satellite Navigation Techniques for Terrestrial Users					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	26	01	2.A.12	-12	Radio Antenna Remover	0549
		27	01	2.A.12	-12	Radio Antenna Installer	0510
		26	01	2.A.12	-10	Radio Receiver Remover	0550
		27	01	2.A.12	-10	Radio Receiver Installer	0551
		26	01	2.A.12	-11	Radar Receiver Remover	0625
		27	01	2.A.12	-11	Radar Receiver Installer	0622
		26	01	2.C.17		Code Generator Remover	0552
		27	01	2.C.17		Code Generator Installer	0553
		26	01	2.A.12	-13	Frequency Synthesizer Remover	0554
		27	01	2.A.12	-13	Frequency Synthesizer Installer	0555
		26	01	2.C.18		Precision Clock Remover	0556
		27	01	2.C.18		Precision Clock Installer	0557
2	Configure subsatellite involved in each test	26	01	4.F.01	-1	Comm/Nav Subsatellite Module Remover	0558
		27	01	4.F.01	-1	Comm/Nav Subsatellite Module Installer	0559
		09	01	4.F.01	-1	Comm/Nav Subsatellite Module Aligner	0560
3	Calibrate antennas and transmitter power	08	01	2.A.12	-12	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.A.12	-8	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.A.12	-9	Radar Antenna-Transmitter Calibrator	0807
		08	01	2.B.03	-5	Radio Antenna-Transmitter Calibrator	0561
		08	01	2.B.03	-5	Radar Antenna-Transmitter Calibrator	0807

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-4.0-04-3	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 4.0 Satellite Navigation Techniques for Terrestrial Users						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Deploy subsatellite	10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-5	Comm/Nav Subsatellite Launch Controller	0489
		10	01	4.F.01	-1	Comm/Nav Subsatellite Launch Controller	0489
7	Turn on equipment	15	01	2.B.03	-5	Radio Transmitter Power Control Actuator	0562
		15	01	2.A.12	-8	Radio Transmitter Power Control Actuator	0562
		15	01	2.A.12	-9	Radar Transmitter Power Control Actuator	0808
		15	01	2.B.03	-5	Radio Receiver Power Control Actuator	0563
		15	01	2.A.12	-10	Radio Receiver Power Control Actuator	0563
		15	01	2.A.12	-11	Radar Receiver Power Control Actuator	0809
		15	01	2.B.03	-5	Radar Receiver Power Control Actuator	0809
		15	01	2.B.03	-5	Radar Transmitter Power Control Actuator	0808

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-4.0-05-1	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT:						MISSION MODE: B	
4.0 Satellite Navigation Techniques for Terrestrial Users						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Secure equipment following tests	17	01	2.A.12	-8	Radio Transmitter Stower	0564
		17	01	2.A.12	-9	Radar Transmitter Stower	0619
		17	01	2.A.12	-10	Radio Receiver Stower	0565
		17	01	2.A.12	-11	Radar Receiver Stower	0626
		17	01	2.A.12	-12	Radio Antenna Stower	0566
		17	01	2.A.12	-13	Frequency Synthesizer Stower	0567
		17	01	2.C.17		Code Generator Stower	0568
		17	01	2.C.18		Precision Clock Stower	0569
		17	01	4.F.01	-1	Comm/Nav Subsatellite Stower	0570
9	Terminate experiments	16	01	2.B.03	-5	Radio Transmitter Power Control Deactuator	0571
		16	01	2.A.12	-8	Radio Transmitter Power Control Deactuator	0571
		16	01	2.A.12	-9	Radar Transmitter Power Control Deactuator	0810
		16	01	2.B.03	-5	Radio Receiver Power Control Deactuator	0572
		16	01	2.A.12	-10	Radio Receiver Power Control Deactuator	0572
		16	01	2.A.12	-11	Radar Receiver Power Control Deactuator	0811
		16	01	2.B.03	-5	Radar Transmitter Power Control Deactuator	0810
		16	01	2.B.03	-5	Radar Receiver Power Control Deactuator	0811

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE B-4.0-10-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:						MISSION MODE: B		
4.0 Satellite Navigation Techniques for Terrestrial Users					BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
10		Repair failed equipment	07	01	2.B.03	-2	Comm/Nav C/D Equipment Fault Identifier	0575
			07	01	2.B.03	-5	Comm/Nav C/D Equipment Fault Identifier	0575
			07	01	2.A.12	-8	Radio Transmitter Fault Identifier	0521
			07	01	2.A.12	-9	Radar Transmitter Fault Identifier	0683
			07	01	2.A.12	-10	Radio Receiver Fault Identifier	0522
			07	01	2.A.12	-11	Radar Receiver Fault Identifier	0685
			07	01	2.A.12	-12	Radio Antenna Fault Identifier	0524
			07	01	2.A.12	-13	Frequency Synthesizer Fault Identifier	0576
			07	01	2.C.17		Code Generator Fault Identifier	0578
			07	01	2.C.18		Precision Clock Fault Identifier	0580
			07	01	4.F.01	-1	Comm/Nav Subsatellite Fault Identifier	0582
			28	01	2.B.03	-2	Comm/Nav C/D Equipment Repairer	0537
			28	01	2.B.03	-5	" " " " "	0537
			28	01	2.A.12	-8	Radio Transmitter Repairer	0542
			28	01	2.A.12	-9	Radar Transmitter Repairer	0684
			28	01	2.A.12	-10	Radio Receiver Repairer	0543
			28	01	2.A.12	-11	Radar Receiver Repairer	0686
			28	01	2.A.12	-12	Radio Antenna Repairer	0544
			28	01	2.A.12	-13	Frequency Synthesizer Repairer	0577
			28	01	2.C.17		Code Generator Repairer	0579
			28	01	2.C.18		Precision Clock Repairer	0581
			28	01	4.F.01	-1	Comm/Nav Subsatellite Repairer	0538

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

5.0 On-Board Laser Ranging

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES	C/N-1
							PAGE	B-5.0-04-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 5.0 On-Board Laser Ranging			MISSION MODE: B					
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
8	Launch subsatellites		10	01	4.F.01	-4	Comm/Nav Subsatellite Launch Controller	0489
			10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489
9	Reconfigure experiment equipment		20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
			26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
			26	01	2.A.12	-14	Laser Transmitter Remover	0587
			27	01	2.A.12	-14	Laser Transmitter Installer	0588
			20	01	2.A.12	-15	Laser Receiver Assembler	0589
			21	01	2.A.12	-15	Laser Receiver Disassembler	0590
			26	01	2.A.12	-15	Laser Receiver Module Remover	0591
			27	01	2.A.12	-15	Laser Receiver Module Installer	0592
			26	01	2.A.12	-15	Laser Receiver Remover	0593
			27	01	2.A.12	-15	Laser Receiver Installer	0594
			26	01	2.B.03	-2	Comm/Nav C/D Equipment Module Remover	0595
			27	01	2.B.03	-2	Comm/Nav C/D Equipment Module Installer	0596
			26	01	2.B.03	-6	Comm/Nav C/D Equipment Module Remover	0595
			27	01	2.B.03	-6	Comm/Nav C/D Equipment Module Installer	0596
			26	01	4.F.01	-4	Comm/Nav C/D Subsatellite Module Remover	0558
			27	01	4.F.01	-4	Comm/Nav C/D Subsatellite Module Installer	0559

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-5.0-05-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 5.0 On-Board Laser Ranging						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Terminate experiments	16	01	2.B.03	-6	Laser Transmitter Control Deactuator	0597
		16	01	2.A.12	-14	Laser Transmitter Control Deactuator	0597
		16	01	2.B.03	-6	Laser Receiver Control Deactuator	0598
		16	01	2.A.12	-15	" " " "	0598

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE B-5.0-09-1	
DISCIPLINE:		Communications/Navigation		FPE/SUBGROUP:		C/N-1 Communications/Navigation Research Facility		
EXPERIMENT:		5.0 On-Board Laser Ranging				MISSION MODE: B		
						BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
6	Maintain	laser subsystem	08	01	2.A.12	-14	Laser Transmitter Calibrator	0605
			19	01	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
			20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
			26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
			19	02	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
			26	02	2.A.12	-14	Laser Transmitter Module Remover	0585
			27	02	2.A.12	-14	Laser Transmitter Module Installer	0586
			19	02	5.H		Laser Transmitter Optics Cleaner	0606
			26	02	5.H		Laser Transmitter Module Remover	0585
			27	02	5.H		Laser Transmitter Module Installer	0586
			7	Maintain	Electronics Subsystems	20	01	2.A.12
20	01	2.A.12				-15	Laser Receiver Assembler	0589
21	01	2.A.12				-14	Laser Transmitter Disassembler	0584
21	01	2.A.12				-15	Laser Receiver Disassembler	0590
26	01	2.B.03				-6	Comm/Nav C/D Equipment Module Remover	0595
27	01	2.B.03				-6	Comm/Nav C/D Equipment Module Installer	0596
26	01	2.A.12				-14	Laser Transmitter Module Remover	0585
27	01	2.A.12				-14	Laser Transmitter Module Installer	0586
26	01	2.A.12				-15	Laser Receiver Module Remover	0591
27	01	2.A.12				-15	Laser Receiver Module Installer	0592
26	01	4.F.01				-4	Comm/Nav Subsatellite Module Remover	0558
27	01	4.F.01				-4	Comm/Nav Subsatellite Module Installer	0559

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-5.0-10-1
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B	
EXPERIMENT: 5.0 On-Board Laser Ranging						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Maintain Laser Subsystem	07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
		08	01	2.A.12	-14	Laser Transmitter Calibrator	0605
		19	01	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
		20	01	2.A.12	-14	Laser Transmitter Assembler	0583
		21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
		26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
		07	02	2.A.12	-14	Laser Transmitter Fault Identifier	0607
		19	02	2.A.12	-14	Laser Transmitter Optics Cleaner	0606
		26	02	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	02	2.A.12	-14	Laser Transmitter Module Installer	0586
		07	02	5.H		Laser Transmitter Fault Identifier	0607
		19	02	5.H		Laser Transmitter Optics Cleaner	0606
		26	02	5.H		Laser Transmitter Module Remover	0585
		27	02	5.H		Laser Transmitter Module Installer	0586
7	Maintain Electronics Subsystem	07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
		20	01	2.A.12	-14	Laser Transmitter Assembler	0583
		21	01	2.A.12	-14	Laser Transmitter Disassembler	0584
		26	01	2.A.12	-14	Laser Transmitter Module Remover	0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer	0586
		07	01	2.B.03	-6	Comm/Nav C/D Equipment Fault Identifier	0575
		26	01	2.B.03	-6	Comm/Nav C/D Equipment Module Remover	0595
		27	01	2.B.03	-6	Comm/Nav C/D Equipment Module Installer	0596
		07	01	2.A.12	-15	Laser Receiver Fault Identifier	0608

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-5.0-10-2	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 5.0 On-Board Laser Ranging				MISSION MODE: B			
				BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION	TITLE				NO.	
7	(Continued)	20	01	2.A.12	-15	Laser Receiver Assembler	0589
		21	01	2.A.12	-15	Laser Receiver Disassembler	0590
		26	01	2.A.12	-15	Laser Receiver Module Remover	0591
		27	01	2.A.12	-15	Laser Receiver Module Installer	0592
		07	01	4.F.01	-4	Comm/Nav Subsatellite Fault Identifier	0582
		26	01	4.F.01	-4	Comm/Nav Subsatellite Module Remover	0558
		27	01	4.F.01	-4	Comm/Nav Subsatellite Module Installer	0559

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

6.0 Autonomous Navigation Systems for Space

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1	
							PAGE B-6.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space			MISSION MODE: B					
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
1	Program general purpose computer		13	01	4.B.01	Computer Program Determiner	0609	
			13	01	3.L.01	" " "	0609	
			10	01	4.B.01	Computer Program Controller	0610	
2	Setup selected sensors		18	01	2.A.12	-16	Radar Transmitter Unstower	0611
			20	01	2.A.12	-16	Radar Transmitter Assembler	0612
			14	01	2.A.12	-16	Radar Transmitter Tester	0613
			27	01	2.A.12	-16	Radar Transmitter Installer	0614
			18	01	2.A.12	-17	Radar Receiver Unstower	0628
			20	01	2.A.12	-17	Radar Receiver Assembler	0620
			14	01	2.A.12	-17	Radar Receiver Tester	0627
			27	01	2.A.12	-17	Radar Receiver Installer	0622
			18	01	2.A.12	-14	Laser Transmitter Unstower	0629
			20	01	2.A.12	-14	Laser Transmitter Assembler	0583
			14	01	2.A.12	-14	Laser Transmitter Tester	0630
			27	01	2.A.12	-14	Laser Transmitter Installer	0588
			18	01	2.A.12	-15	Laser Receiver Unstower	0631
			20	01	2.A.12	-15	Laser Receiver Assembler	0589
			14	01	2.A.12	-15	Laser Receiver Tester	0632
			27	01	2.A.12	-15	Laser Receiver Installer	0594
			18	01	2.A.04		TV Camera Unstower	0054
			14	01	2.A.04		TV Camera Tester	0633
			27	01	2.A.04		TV Camera Installer	0306
			18	01	2.A.21	-1	Radiometer Unstower	0642
			20	01	2.A.21	-1	Radiometer Assembler	0634
			14	01	2.A.21	-1	Radiometer Tester	0641
			27	01	2.A.21	-1	Radiometer Installer	0636
			18	01	2.E.02		Star Tracker Unstower	0291
			20	01	2.E.02		Star Tracker Assembler	0643

FLIGHT EXPERIMENT TASK-SKILLS

SERIES C/N-1

PAGE B-6.0-04-2

DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility

EXPERIMENT: 6.0 Autonomous Navigation Systems for Space MISSION MODE: B

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
2	(Continued)	14	01	2.E.02	Star Tracker Tester	0646
		27	01	2.E.02	Star Tracker Installer	0305
		18	01	2.C.19	Inertial Navigation Sensor Unstower	0651
		14	01	2.C.19	Inertial Navigation Sensor Tester	0650
		27	01	2.C.19	Inertial Navigation Sensor Installer	0647
		18	01	2.A.45	Magnetostatic Device Unstower	0660
		20	01	2.A.45	Magnetostatic Device Assembler	0652
		14	01	2.A.45	Magnetostatic Device Tester	0659
		27	01	2.A.45	Magnetostatic Device Installer	0654
		14	01	4.C.03	Laser Transmitter Tester	0630
		14	01	4.C.03	Laser Receiver Tester	0632
		14	01	4.C.04	Radar Transmitter Tester	0613
		14	01	4.C.04	Radar Receiver Tester	0627
		14	01	4.C.02	Electronic Instruments Tester	0106
		27	02	2.A.12	Radar Transmitter Installer	0614
		27	02	4.E.02	" " "	0614
		27	02	5.H	" " "	0614
				-16		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
DISCIPLINE: Communications/Navigation						PAGE B-6.0-04-3
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space						MISSION MODE: B
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
2	(Continued)	27	02	2.A.12	-14	Laser Transmitter Installer 0588
		27	02	4.E.02		" " " 0588
		27	02	5.H		" " " 0588
		27	02	2.A.12	-15	Laser Receiver Installer 0594
		27	02	4.E.02		" " " 0594
		27	02	5.H		" " " 0594
5	Reconfigure experiment equipment	26	01	2.B.03	-7	Comm/Nav C/D Equipment Module Remover 0595
		27	01	2.B.03	-7	Comm/Nav C/D Equipment Module Installer 0596
		26	01	2.A.12	-16	Radar Transmitter Module Remover 0615
		27	01	2.A.12	-16	Radar Transmitter Module Installer 0616
		14	01	2.A.12	-16	Radar Transmitter Tester 0613
		27	01	2.A.12	-16	Radar Transmitter Installer 0614
		26	01	2.A.12	-17	Radar Receiver Module Remover 0624
		27	01	2.A.12	-17	Radar Receiver Module Installer 0623
		14	01	2.A.12	-17	Radar Receiver Tester 0627
		27	01	2.A.12	-17	Radar Receiver Installer 0622
		26	01	2.A.12	-14	Laser Transmitter Module Remover 0585
		27	01	2.A.12	-14	Laser Transmitter Module Installer 0586
		14	01	2.A.12	-14	Laser Transmitter Tester 0630
		27	01	2.A.12	-14	Laser Transmitter Installer 0588
		26	01	2.A.12	-16	Radar Transmitter Remover 0617
		26	02	2.A.12	-16	" " " 0617
		26	02	4.E.02		" " " 0617
		26	02	5.H		" " " 0617
		26	01	2.A.12	-17	Radar Receiver Remover 0625
		26	02	2.A.12	-17	" " " 0625

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-6.0-04-4	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
6.0 Autonomous Navigation Systems for Space					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	26	02	4.E.02		Radar Receiver Remover	0625
		26	02	5.H		" " "	0625
		26	01	2.A.12	-14	Laser Transmitter Remover	0587
		26	02	2.A.12	-14	" " "	0587
		26	02	4.E.02		" " "	0587
		26	02	5.H		" " "	0587
		26	01	2.A.12	-15	Laser Receiver Remover	0593
		26	02	2.A.12	-15	" " "	0593
		26	02	4.E.02		" " "	0593
		26	02	5.H		" " "	0593
		26	01	2.A.12	-15	Laser Receiver Module Remover	0591
		27	01	2.A.12	-15	Laser Receiver Module Installer	0592
		14	01	2.A.12	-15	Laser Receiver Tester	0632
		27	01	2.A.12	-15	Laser Receiver Installer	0594
		26	01	2.A.04		TV Camera Module Remover	0111
		27	01	2.A.04		TV Camera Module Installer	0112
		14	01	2.A.04		TV Camera Tester	0633
		27	01	2.A.04		TV Camera Installer	0306
		26	01	2.A.21	-1	Radiometer Module Remover	0638
		27	01	2.A.21	-1	Radiometer Module Installer	0637
		14	01	2.A.21	-1	Radiometer Tester	0641
		27	01	2.A.21	-1	Radiometer Installer	0636
		26	01	2.E.02		Star Tracker Module Remover	0343
		27	01	2.E.02		Star Tracker Module Installer	0344
		14	01	2.E.02		Star Tracker Tester	0646
		27	01	2.E.02		Star Tracker Installer	0305
		26	01	2.C.19		Inertial Navigation Sensor Remover	0648
		14	01	3.C.19		Inertial Navigation Sensor Tester	0650
		27	01	2.C.19		Inertial Navigation Sensor Installer	0647

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE B-6.0-04-5
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT:			MISSION MODE: B			
6.0 Autonomous Navigation Systems for Space					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
5	(Continued)	26	01	2.A.45	Magnetostatic Device Module Remover	0656
		27	01	2.A.45	Magnetostatic Device Module Installer	0655
		14	01	2.A.45	Magnetostatic Device Tester	0659
		27	01	2.A.45	Magnetostatic Device Installer	0654
		14	01	4.C.03	Laser Transmitter Tester	0630
		14	01	4.C.03	Laser Receiver Tester	0632
		14	01	4.C.04	Radar Transmitter Tester	0613
		14	01	4.C.04	Radar Receiver Tester	0627
		14	01	4.C.02	Electronic Instruments Tester	0106
		27	02	2.A.12 -16	Radar Transmitter Installer	0614
		27	02	4.E.02	" " "	0614
		27	02	5.H	" " "	0614
		27	02	2.A.12 -17	Radar Receiver Installer	0622
		27	02	4.E.02	" " "	0622
		27	02	5.H	" " "	0622
		27	02	2.A.12 -14	Laser Transmitter Installer	0588
		27	02	4.E.02	" " "	0588
		27	02	5.H	" " "	0588
		27	02	2.A.12 -15	Laser Receiver Installer	0594
		27	02	4.E.02	" " "	0594
		27	02	5.H	" " "	0594
		26	01	2.A.04	TV Camera Remover	0661
		26	01	2.A.21 -1	Radiometer Remover	0639
		26	01	2.E.02	Star Tracker Remover	0645
		26	01	2.A.45	Magnetostatic Device Remover	0657

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-6.0-05-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:						MISSION MODE: B	
6.0 Autonomous Navigation Systems for Space			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
6	Terminate experiments	16	01	2.B.03	-7	Radar Transmitter Control Deactuator	0664
		16	01	2.A.12	-6	Radar Transmitter Control Deactuator	0664
		26	01	2.A.12	-6	Radar Transmitter Remover	0617
		22	01	2.A.12	-6	Radar Transmitter Translocator	0665
		17	01	2.A.12	-6	Radar Transmitter Stower	0619
		16	01	2.B.03	-7	Radar Receiver Control Deactuator	0666
		16	01	2.A.12	-7	" " " "	0666
		26	01	2.A.12	-7	Radar Receiver Remover	0625
		22	01	2.A.12	-7	Radar Receiver Translocator	0667
		17	01	2.A.12	-7	Radar Receiver Stower	0626
		26	02	2.A.12	-6	Radar Transmitter Remover	0617
		26	02	4.E.02		" " " "	0617
		26	02	5.H		" " " "	0617
		22	02	2.A.12	-6	Radar Transmitter Translocator	0665
		22	02	4.E.02		" " " "	0665
		22	02	5.H		" " " "	0665
		26	02	2.A.12	-7	Radar Receiver Remover	0625
		26	02	4.E.02		" " " "	0625
		26	02	5.H		" " " "	0625
		22	02	2.A.12	-7	Radar Receiver Translocator	0667
		22	02	4.E.02		" " " "	0667
		22	02	5.H		" " " "	0667
		16	01	2.B.03	-7	Laser Transmitter Control Deactuator	0597
		16	01	2.A.12	-14	Laser Transmitter Control Deactuator	0597
		26	01	2.A.12	-14	Laser Transmitter Remover	0587

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-6.0-05-2	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:						MISSION MODE: B	
6.0 Autonomous Navigation Systems for Space					BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
6	(Continued)	26	02	2.A.12	-14	Laser Transmitter Remover	0587
		26	02	4.E.02		" " "	0587
		26	02	5.H		" " "	0587
		22	01	2.A.12	-14	Laser Transmitter Translocator	0668
		22	02	2.A.12	-14	" " "	0668
		22	02	4.E.02		" " "	0668
		22	02	5.H		" " "	0668
		16	01	2.B.03	-7	Laser Receiver Control Deactuator	0598
		16	01	2.A.12	-15	" " " "	0598
		26	01	2.A.12	-15	Laser Receiver Remover	0593
		26	02	2.A.12	-15	" " "	0593
		26	02	4.E.02		" " "	0593
		26	02	5.H		" " "	0593
		22	01	2.A.12	-15	Laser Receiver Translocator	0669
		22	02	2.A.12	-15	" " "	0669
		22	02	4.E.02		" " "	0669
		22	02	5.H		" " "	0669
		17	01	2.A.12	-15	Laser Receiver Stower	0670
		17	01	2.A.12	-16	Laser Transmitter Stower	0671
		16	01	2.B.03	-7	TV Camera Control Deactuator	0672
		16	01	2.A.04		" " " "	0672
		26	01	2.A.04		TV Camera Remover	0661
		22	01	2.A.04		TV Camera Translocator	0026
		17	01	2.A.04		TV Camera Stower	0064
		16	01	2.B.03	-7	Radiometer Control Deactuator	0673
		16	01	2.A.21	-1	" " "	0673
		26	01	2.A.21	-1	Radiometer Remover	0639
		22	01	2.A.21	-1	Radiometer Translocator	0674
		17	01	2.A.21	-1	Radiometer Stower	0640
		16	01	2.B.03	-7	Star Tracker Control Deactuator	0675

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE B-6.0-05-3
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space					MISSION MODE: B	
					BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
6	(Continued)	16	01	2.E.02	Star Tracker Control Deactuator	0675
		26	01	2.E.02	Star Tracker Remover	0645
		22	01	2.E.02	Star Tracker Translocator	0676
		17	01	2.E.02	Star Tracker Stower	0321
		16	01	2.B.03	Inertial Navigation Sensor Control Deactuator	0677
		16	01	2.C.19	Inertial Navigation Sensor Control Deactuator	0677
		26	01	2.C.19	Inertial Navigation Sensor Remover	0648
		22	01	2.C.19	Inertial Navigation Sensor Translocator	0678
		17	01	2.C.19	Inertial Navigation Sensor Stower	0649
		16	01	2.B.03	Magnetostatic Device Control Deactuator	0679
		16	01	2.A.45	Magnetostatic Device Control Deactuator	0679
		26	01	2.A.45	Magnetostatic Device Remover	0657
		22	01	2.A.45	Magnetostatic Device Translocator	0680
		17	01	2.A.45	Magnetostatic Device Stower	0658
		16	01	2.B.03	Computer Control Deactuator	0319
		16	01	4.B.01	" " "	0319
		16	01	2.B.03	Comm/Nav C/D Equipment Control Deactuator	0681

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-6.0-10-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 6.0 Autonomous Navigation Systems for Space			MISSION MODE: B				
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Repair failed equipment	07	01	2.A.12	-16	Radar Transmitter Fault Identifier	0683
		07	01	2.A.12	-17	Radar Receiver Fault Identifier	0685
		07	01	2.A.12	-14	Laser Transmitter Fault Identifier	0607
		07	01	2.A.12	-15	Laser Receiver Fault Identifier	0608
		07	01	2.A.04		TV Camera Fault Identifier	0689
		07	01	2.A.21	-1	Radiometer Fault Identifier	0691
		07	01	2.E.02		Star Tracker Fault Identifier	0693
		07	01	2.C.19		Inertial Navigation Sensor Fault Identifier	0695
		07	01	2.A.45		Magnetostatic Device Fault Identifier	0697
		07	01	4.B.01	-2	Computer Fault Identifier	0523
		07	01	2.B.03	-7	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	4.A.01		Telemetry Equipment Fault Identifier	0699
		28	01	2.A.12	-16	Radar Transmitter Repairer	0684
		28	01	2.A.12	-17	Radar Receiver Repairer	0686
		28	01	2.A.12	-14	Laser Transmitter Repairer	0687
		28	01	2.A.12	-15	Laser Receiver Repairer	0688
		28	01	2.A.04		TV Camera Repairer	0690
		28	01	2.A.21	-1	Radiometer Repairer	0692
		28	01	2.E.02		Star Tracker Repairer	0694
		28	01	2.C.19		Inertial Navigation Sensor Repairer	0696
		28	01	2.A.45		Magnetostatic Device Repairer	0698
		28	01	4.B.01	-2	Computer Repairer	0540
		28	01	2.B.03	-7	Comm/Nav C/D Equipment Repairer	0537
		28	01	4.A.01		Telemetry Equipment Repairer	0700

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

7.0 Transmitter Breakdown Tests

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-1	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Deploy microwave test structures	18	01	2.C.20	-1	Microwave Test Structure Unstower	0774
		18	01	2.C.20	-2	" " " "	0774
		22	01	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	01	2.C.20	-2	Microwave Test Structure Translocator	0778
		22	02	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	02	2.C.20	-2	Microwave Test Structure Translocator	0778
		22	02	4.E.02		Microwave Test Structure Translocator	0778
		22	02	5.H		Microwave Test Structure Translocator	0778
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	4.E.02		Microwave Test Structure Assembler	0777
		20	02	4.H		Microwave Test Structure Assembler	0777
		27	02	2.C.20	-1	Microwave Test Structure Installer	0772
		27	02	2.C.20	-2	Microwave Test Structure Installer	0772
		27	02	1.A.01	-8	Microwave Test Structure Installer	0772
		27	02	4.E.02		Microwave Test Structure Installer	0772

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-2	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 7.0 Transmitter Breakdown Tests				MISSION MODE: B			
				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNC NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
1	(Continued)	27	02	5.H	Microwave Test Structure Installer	0772	
		18	01	2.A.46	Optical Monitoring Device Unstower	0752	
		22	01	2.A.46	Optical Monitoring Device Translocator	0754	
		22	02	2.A.46	Optical Monitoring Device Translocator	0754	
		22	02	4.E.02	Optical Monitoring Device Translocator	0754	
		22	02	5.H	Optical Monitoring Device Translocator	0754	
		27	02	2.A.46	Optical Monitoring Device Installer	0749	
		27	02	4.E.02	Optical Monitoring Device Installer	0749	
		27	02	5.H	Optical Monitoring Device Installer	0749	
		18	01	2.A.47	-1 Pressure Monitoring Device Unstower	0744	
		22	01	2.A.47	-1 Pressure Monitoring Device Translocator	0746	
		22	02	2.A.47	-1 Pressure Monitoring Device Translocator	0746	
		22	02	4.E.02	-1 Pressure Monitoring Device Translocator	0746	
		22	02	5.H	-1 Pressure Monitoring Device Translocator	0746	
		27	02	2.A.47	-1 Pressure Monitoring Device Installer	0741	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-3	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	27	02	2.C.20		Pressure Monitoring Device Installer	0741
		27	02	4.E.02		Pressure Monitoring Device Installer	0741
		27	02	5.H		Pressure Monitoring Device Installer	0741
		18	01	2.A.03	-11	Spectrometer Unstower	0007
		22	01	2.A.03	-11	Spectrometer Translocator	0008
		22	02	2.A.03	-11	" "	0008
		22	02	4.E.02		" "	0008
		22	02	5.H		" "	0008
		27	02	2.A.03	-11	Spectrometer Installer	0006
		27	02	1.A.03	-8	" "	0006
		27	02	4.E.02		" "	0006
		27	02	5.H		" "	0006
		18	01	2.A.48		Temperature Monitoring Device Unstower	0736
		22	01	2.A.48		Temperature Monitoring Device Translocator	0738
		22	02	2.A.48		Temperature Monitoring Device Translocator	0738
		22	02	4.E.02		Temperature Monitoring Device Translocator	0738
		22	02	5.H		Temperature Monitoring Device Translocator	0738
		27	02	2.A.48		Temperature Monitoring Device Installer	0733
		27	02	2.C.20		Temperature Monitoring Device Installer	0733
		27	02	4.E.02		Temperature Monitoring Device Installer	0733

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-7.0-04-4
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	27	02	5.H		Temperature Monitoring Device Installer	0733
		18	01	2.A.40		Spacecraft Plasma Probe Unstower	0728
		22	01	2.A.49		Spacecraft Plasma Probe Translocator	0730
		22	02	2.A.49		Spacecraft Plasma Probe Translocator	0730
		22	02	4.E.02		Spacecraft Plasma Probe Translocator	0730
		22	02	5.H		Spacecraft Plasma Probe Translocator	0730
		27	02	2.A.40		Spacecraft Plasma Probe Installer	0725
		27	02	1.A.03	-8	Spacecraft Plasma Probe Installer	0725
		27	02	4.E.02		Spacecraft Plasma Probe Installer	0725
		27	02	5.H		Spacecraft Plasma Probe Installer	0725
2	Deploy microwave oscillator and associated instruments	18	01	2.D.54		Microwave Transmitter Unstower	0764
		22	01	2.D.54		Microwave Transmitter Translocator	0766
		27	01	2.D.54		Microwave Transmitter Installer	0761
		18	01	2.A.50	-1	Power Monitoring Device Unstower	0710
		18	01	2.A.50	-2	" " " "	0710
		22	01	2.A.50	-1	Power Monitoring Device Translocator	0712
		22	01	2.A.50	-2	Power Monitoring Device Translocator	0712

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-5	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	27	01	2.A.50	-1	Power Monitoring Device Installer	0707
		27	01	2.A.50	-2	" " " "	0707
		27	01	2.D.54		" " " "	0707
		27	01	2.C.20		" " " "	0707
		18	01	2.D.55		Waveform Modulator Unstower	0720
		22	01	2.D.55		Waveform Modulator Translocator	0722
		27	01	2.D.55		Waveform Modulator Installer	0717
		27	01	2.D.54		" " " "	0717
		27	01	2.B.03	-9	" " " "	0717
3	Examine physical condition of experiment system	03	02	2.C.20	-1	Microwave Test Structure Inspector	0769
		03	02	2.C.20	-2	Microwave Test Structure Inspector	0769
		03	02	4.E.02		Microwave Test Structure Inspector	0769
		03	02	5.H		Microwave Test Structure Inspector	0769
		04	02	2.C.20	-1	Microwave Test Structure Condition Determiner	0768
		04	02	2.C.20	-2	Microwave Test Structure Condition Determiner	0768
		04	02	4.E.02		Microwave Test Structure Condition Determiner	0768
		04	02	5.H		Microwave Test Structure Condition Determiner	0768
		03	01	2.D.54		Microwave Transmitter Inspector	0758
		04	01	2.D.54		Microwave Transmitter Condition Determiner	0757

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-6	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Microscopically examine inner walls of microwave test section	22	02	2.A.18		Microscope Translocator	0704
		22	02	4.E.02		" "	0704
		22	02	5.H		" "	0704
		21	02	2.C.20	-1	Microwave Test Structure Disassembler	0776
		21	02	2.C.20	-2	Microwave Test Structure Disassembler	0776
		21	02	4.E.02		Microwave Test Structure Disassembler	0776
		21	02	5.H		Microwave Test Structure Disassembler	0776
		03	02	2.C.20	-1	Microwave Test Structure Inspector	0769
		03	02	2.C.20	-2	" " " "	0769
		03	02	2.A.18		" " " "	0769
		03	02	4.E.02		" " " "	0769
		03	02	5.H		" " " "	0769
		03	02	5.B.01		" " " "	0769
		04	02	2.C.20	-1	Microwave Test Structure Condition Determiner	0768
		04	02	2.C.20	-2	Microwave Test Structure Condition Determiner	0768
		04	02	2.A.18		Microwave Test Structure Condition Determiner	0768
		04	02	4.E.02		Microwave Test Structure Condition Determiner	0768
		04	02	5.H		Microwave Test Structure Condition Determiner	0768
		04	02	5.B.01		Microwave Test Structure Condition Determiner	0768

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-7.0-04-7
DISCIPLINE:	Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B
EXPERIMENT:	7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	2.C.20	-2	Microwave Test Structure Assembler	0777
		20	02	4.E.02		Microwave Test Structure Assembler	0777
		20	02	5.H		Microwave Test Structure Assembler	0777
		18	01	2.A.18		Microscope Unstower	0702
		22	01	2.A.18		Microscope Translocator	0704
		17	01	2.A.18		Microscope Stower	0703
5	Reconfigure experiment equipment	21	02	2.C.20	-1	Microwave Test Structure Disassembler	0776
		21	02	2.C.20	-2	Microwave Test Structure Disassembler	0776
		21	02	4.E.02		Microwave Test Structure Disassembler	0776
		21	02	5.H		Microwave Test Structure Disassembler	0776
		20	02	2.C.20	-1	Microwave Test Structure Assembler	0777
		20	02	2.C.20	-2	" " " "	0777
		20	02	4.E.02		" " " "	0777
		20	02	5.H		" " " "	0777
		26	02	2.C.20	-1	Microwave Test Structure Remover	0773
		26	02	2.C.20	-2	" " " "	0773
		26	02	4.E.02		" " " "	0773
		26	02	5.H		" " " "	0773

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	C/N-1
						PAGE	B-7.0-04-8
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5.	(Continued)	27	02	2.C.20	-1	Microwave Test Structure Installer	0772
		27	02	2.C.20	-2	" " " "	0772
		27	02	4.E.02		" " " "	0772
		27	02	5.H		" " " "	0772
		26	02	2.C.20	-1	Microwave Test Structure Module Remover	0771
		26	02	2.C.20	-2	Microwave Test Structure Module Remover	0771
		26	02	4.E.02		Microwave Test Structure Module Remover	0771
		26	02	5.H		Microwave Test Structure Module Remover	0771
		27	02	2.C.20	-1	Microwave Test Structure Installer	0770
		27	02	2.C.20	-2	" " " "	0770
		27	02	4.E.02		" " " "	0770
		27	02	5.H		" " " "	0770
		26	02	2.A.46		Optical Monitoring Device Remover	0750
		26	02	2.C.20		" " " "	0750
		26	02	4.E.02		" " " "	0750
		26	02	5.H		" " " "	0750
		27	02	2.A.46		Optical Monitoring Device Installer	0749
		27	02	2.C.20		Optical Monitoring Device Installer	0749
		27	02	4.E.02		Optical Monitoring Device Installer	0749
		27	02	5.H		Optical Monitoring Device Installer	0749
		26	02	2.A.47	-1	Pressure Monitoring Device Remover	0742

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-04-9	
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						MISSION MODE: B	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	26	02	2.C.20		Pressure Monitoring Device Remover	0742
		26	02	4.E.02		" " " "	0742
		26	02	5.H		" " " "	0742
		27	02	2.A.47	-1	Pressure Monitoring Device Installer	0741
		27	02	2.C.20		Pressure Monitoring Device Installer	0741
		27	02	4.E.02		Pressure Monitoring Device Installer	0741
		27	02	5.H		Pressure Monitoring Device Installer	0741
		26	02	2.A.03	-11	Spectrometer Remover	0315
		26	02	1.A.03	-8	" "	0315
		26	02	4.E.02		" "	0315
		26	02	5.H		" "	0315
		27	02	2.A.03	-11	Spectrometer Installer	0006
		27	02	1.A.03	-8	" "	0006
		27	02	4.E.02		" "	0006
		27	02	5.H		" "	0006
		26	02	2.A.48		Temperature Monitoring Device Remover	0735
		26	02	2.C.20		Temperature Monitoring Device Remover	0735
		26	02	4.E.02		Temperature Monitoring Device Remover	0735
		26	02	5.H		Temperature Monitoring Device Remover	0735
		27	02	2.A.48		Temperature Monitoring Device Installer	0733

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-7.0-04-10
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests							MISSION MODE: B
							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	27	02	2.C.20		Temperature Monitoring Device Installer	0733
		27	02	4.E.02		Temperature Monitoring Device Installer	0733
		27	02	5.H		Temperature Monitoring Device Installer	0733
		26	02	2.A.49		Spacecraft Plasma Probe Remover	0726
		26	02	1.A.03	-8	" " " "	0726
		26	02	4.E.02		" " " "	0726
		26	02	5.H		" " " "	0726
		27	02	2.A.49		Spacecraft Plasma Probe Installer	0725
		27	02	1.A.03	-8	" " " "	0725
		27	02	4.E.02		" " " "	0725
		27	02	5.H		" " " "	0725
		26	01	2.D.54		Microwave Transmitter Remover	0762
		27	01	2.D.54		Microwave Transmitter Installer	0761
		26	01	2.D.54		Microwave Transmitter Module Remover	0760
		27	01	2.D.54		Microwave Transmitter Module Installer	0759
		26	01	2.A.50	-1	Power Monitoring Device Remover	0708
		26	01	2.A.50	-2	" " " "	0708
		26	01	2.D.54		" " " "	0708
		26	01	2.C.20		" " " "	0708
		27	01	2.A.50	-1	Power Monitoring Device Installer	0707
		27	01	2.A.50	-2	" " " "	0707
		27	01	2.D.54		" " " "	0707
		27	01	2.C.20		" " " "	0707
		26	01	2.D.55		Waveform Modulator Remover	0718
		26	01	2.B.03	-9	" " " "	0718

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE B-7.0-04-11		
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests				MISSION MODE: B				
				BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
5	(Continued)	26	01	2.D.54		Waveform Modulator Remover	0718	
		27	01	2.D.55		Waveform Modulator Installer	0717	
		27	01	2.B.03	-9	" " "	0717	
		27	01	2.D.54		" " "	0717	
		26	01	2.D.55		Waveform Modulator Module Remover	0716	
		27	01	2.D.55		Waveform Modulator Module Installer	0715	
		26	01	2.B.03	-9	Comm/Nav C/D Equipment Module Remover	0558	
		27	01	2.B.03	-9	Comm/Nav C/D Equipment Module Installer	0559	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE B-7.0-05-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 7.0 Transmitter Breakdown Tests			MISSION MODE: B			
			BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
6	Terminate experiments	16	01	2.D.54	Microwave Transmitter Control Deactuator	0756
		16	01	2.B.03	-9 Microwave Transmitter Control Deactuator	0756
		26	01	2.D.54	Microwave Transmitter Remover	0762
		22	01	2.D.54	Microwave Transmitter Translocator	0766
		17	01	2.D.54	Microwave Transmitter Stower	0765
		16	01	2.D.55	Waveform Modulator Control Deactuator	0714
		16	01	2.B.03	-9 Waveform Modulator Control Deactuator	0714
		26	01	2.D.55	Waveform Modulator Remover	0718
		26	01	2.B.03	-9 " " "	0718
		26	01	2.D.54	" " "	0718
		17	01	2.D.55	Waveform Modulator Stower	0721
		22	01	2.D.55	Waveform Modulator Translocator	0722
		26	01	2.A.50	-1 Power Monitoring Device Remover	0708
		26	01	2.A.50	-2 " " " "	0708
		26	01	2.D.54	" " " "	0708
		16	01	2.A.50	-1 Power Monitoring Device Control Deactuator	0706
		16	01	2.A.50	-2 Power Monitoring Device Control Deactuator	0706
		16	01	2.B.03	-9 Power Monitoring Device Control Deactuator	0706
		22	01	2.A.50	-1 Power Monitoring Device Translocator	0712
		22	01	2.A.50	-2 Power Monitoring Device Translocator	0712
		17	01	2.A.50	-1 Power Monitoring Device Stower	0711
		17	01	2.A.50	-2 " " " "	0711

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-05-2	
DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	16	01	2.B.03	-9	Comm/Nav C/D Equipment Control Deactuator	0681
		21	02	2.C.20	-1	Microwave Test Structure Disassembler	0776
		21	02	2.C.20	-2	Microwave Test Structure Disassembler	0776
		21	02	4.E.02		Microwave Test Structure Disassembler	0776
		21	02	5.H		Microwave Test Structure Disassembler	0776
		26	02	2.C.20	-1	Microwave Test Structure Remover	0773
		26	02	2.C.20	-2	" " " "	0773
		26	02	1.A.01	-8	" " " "	0773
		26	02	4.E.02		" " " "	0773
		26	02	5.H		" " " "	0773
		22	02	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	02	2.C.20	-2	Microwave Test Structure Translocator	0778
		22	02	4.E.02		Microwave Test Structure Translocator	0778
		22	02	5.H		Microwave Test Structure Translocator	0778
		22	01	2.C.20	-1	Microwave Test Structure Translocator	0778
		22	01	2.C.20	-2	Microwave Test Structure Translocator	0778
		17	01	2.C.20	-1	Microwave Test Structure Stower	0775
		17	01	2.C.20	-1	" " " "	0775
		16	01	2.A.46		Optical Monitoring Device Control Deactuator	0748

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE B-7.0-05-3
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B
						BASIC FUNCTION: 05 Experiment Shutdown
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
6	(Continued)	16	01	2.B.03	-9	Optical Monitoring Device Control Deactuator 0748
		26	02	2.A.46		Optical Monitoring Device Remover 0750
		26	02	2.C.20		" " " " 0750
		26	02	4.E.02		" " " " 0750
		26	02	5.H		" " " " 0750
		22	02	2.A.46		Optical Monitoring Device Translocator 0754
		22	02	4.E.02		Optical Monitoring Device Translocator 0754
		22	02	5.H		Optical Monitoring Device Translocator 0754
		22	01	2.A.46		Optical Monitoring Device Translocator 0754
		22	01	4.E.02		Optical Monitoring Device Translocator 0754
		22	01	5.H		Optical Monitoring Device Translocator 0754
		17	01	2.A.46		Optical Monitoring Device Stower 0753
		16	01	2.A.47	-1	Pressure Monitoring Device Control Deactuator 0740
		16	01	2.B.03	-9	Pressure Monitoring Device Control Deactuator 0740
		26	02	2.A.47	-1	Pressure Monitoring Device Remover 0742
		26	02	2.C.20		" " " " 0742
		26	02	4.E.02		" " " " 0742
		26	02	5.H		" " " " 0742
		22	02	2.A.47	-1	Pressure Monitoring Device Translocator 0746
		22	02	4.E.02		Pressure Monitoring Device Translocator 0746

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-7.0-05-4
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility							
EXPERIMENT: 7.0 Transmitter Breakdown Tests							MISSION MODE: B
							BASIC FUNCTION: 05 Experiment Shutdown
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	22	02	5.H		Pressure Monitoring Device Translocator	0746
		22	01	2.A.47	-1	Pressure Monitoring Device Translocator	0746
		17	01	2.A.47		Pressure Monitoring Device Stower	0745
		16	01	2.A.48		Temperature Monitoring Device Control Deactuator	0732
		16	01	2.B.03	-9	Temperature Monitoring Device Control Deactuator	0732
		26	02	2.A.48		Temperature Monitoring Device Remover	0735
		26	02	2.C.20		Temperature Monitoring Device Remover	0735
		26	02	4.E.02		Temperature Monitoring Device Remover	0735
		26	02	5.H		Temperature Monitoring Device Remover	0735
		22	02	2.A.48		Temperature Monitoring Device Translocator	0738
		22	02	4.E.02		Temperature Monitoring Device Translocator	0738
		22	02	5.H		Temperature Monitoring Device Translocator	0738
		22	01	2.A.48		Temperature Monitoring Device Translocator	0738
		17	01	2.A.48		Temperature Monitoring Device Stower	0737
		16	01	2.A.03	-11	Spectrometer Control Deactuator	0409
		16	01	2.B.03	-9	" " "	0409
		26	02	2.A.03	-11	Spectrometer Remover	0315

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-7.0-05-5	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 7.0 Transmitter Breakdown Tests						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	26	02	1.A.03	-8	Spectrometer Remover	0315
		26	02	4.E.02		" "	0315
		26	02	5.H		" "	0315
		22	02	2.A.03	-11	Spectrometer Translocator	0008
		22	02	4.E.02		" "	0008
		22	02	5.H		" "	0008
		22	01	2.A.03	-11	" "	0008
		17	01	2.A.03	-11	Spectrometer Stower	0063
		16	01	2.A.49		Spacecraft Plasma Probe Control Deactuator	0724
		16	01	2.B.03	-9	Spacecraft Plasma Probe Control Deactuator	0724
		26	02	2.A.49		Spacecraft Plasma Probe Remover	0726
		26	02	1.A.03	-8	" " " "	0726
		26	02	4.E.02		" " " "	0726
		26	02	5.H		" " " "	0726
		22	02	2.A.49		Spacecraft Plasma Probe Translocator	0730
		22	02	4.E.02		Spacecraft Plasma Probe Translocator	0730
		22	02	5.H		Spacecraft Plasma Probe Translocator	0730
		22	01	2.A.49		Spacecraft Plasma Probe Translocator	0730
		17	01	2.A.49		Spacecraft Plasma Probe Stower	0729

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE B-7.0-10-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT:						MISSION MODE: B		
7.0 Transmitter Breakdown Tests					BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
10	Repair	failed equipment	07	01	2.D.54		Microwave Transmitter Fault Identifier	0763
			07	01	4.C.04		Microwave Transmitter Fault Identifier	0763
			28	01	2.D.54		Microwave Transmitter Repairer	0767
			07	01	2.D.55		Waveform Modulator Fault Identifier	0719
			07	01	4.C.02		Waveform Modulator Fault Identifier	0719
			28	01	2.D.55		Waveform Modulator Repairer	0723
			07	01	2.A.46		Optical Monitoring Device Fault Identifier	0751
			07	01	4.C.02		Optical Monitoring Device Fault Identifier	0751
			07	01	4.C.07		Optical Monitoring Device Fault Identifier	0751
			28	01	2.A.46		Optical Monitoring Device Repairer	0755
			07	01	2.A.47		-1 Pressure Monitoring Device Fault Identifier	0743
			07	01	4.C.02		Pressure Monitoring Device Fault Identifier	0743
			28	01	2.A.47		-1 Pressure Monitoring Device Repairer	0747
			07	01	2.A.48		Temperature Monitoring Device Fault Identifier	0734
			07	01	4.C.02		Temperature Monitoring Device Fault Identifier	0734
			28	01	2.A.48		Temperature Monitoring Device Repairer	0739
			07	01	2.A.50		-1 Power Monitoring Device Fault Identifier	0709

FLIGHT EXPERIMENT TASK-SKILLS

SERIES C/N-1

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DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility

EXPERIMENT: 7.0 Transmitter Breakdown Tests MISSION MODE: B

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	(Continued)	07	01	2.A.50	-2	Power Monitoring Device Fault Identifier	0709
		07	01	4.C.02		Power Monitoring Device Fault Identifier	0709
		28	01	2.A.50	-1	Power Monitoring Device Repairer	0713
		28	01	2.A.50	-2	" " " "	0713
		07	01	2.A.03	-11	Spectrometer Fault Identifier	0038
		07	01	4.C.02		" " " "	0038
		28	01	2.A.03	-11	Spectrometer Repairer	0779
		07	01	2.A.49		Spacecraft Plasma Probe Fault Identifier	0727
		07	01	4.C.02		Spacecraft Plasma Probe Fault Identifier	0727
		28	01	2.A.49		Spacecraft Plasma Probe Repairer	0731
		07	01	2.B.03	-9	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	4.C.02		Comm/Nav C/D Equipment Fault Identifier	0575
		28	01	2.B.03	-9	Comm/Nav C/D Equipment Repairer	0537
		07	01	2.A.18		Microscope Fault Identifier	0701
		07	01	4.C.07		" " " "	0701
		28	01	2.A.18		Microscope Repairer	0705

DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

12.0 Plasma Propagation Measurements

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-12.0-04-1	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
12.0 Plasma Propagation Measurements						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Make equipment connections	27	01	2.A.12	-10	Radio Receiver Cable Connector	0780
		27	01	2.A.12	-19	Radar Receiver Cable Connector	0800
		27	01	2.E.01		" " " "	0800
		27	01	2.C.22		RV Launch Cable Connector	0781
		27	01	2.E.01		" " " "	0781
		27	01	2.A.12	-8	Radio Transmitter Cable Connector	0782
		27	01	2.A.12	-18	Radar Transmitter Cable Connector	0803
		27	01	2.E.01		" " " "	0803
		27	01	2.A.51		VSWR Measuring Equipment Cable Connector	0783
		27	01	2.E.01		VSWR Measuring Equipment Cable Connector	0783
		27	01	2.A.52		Attitude Measuring Equipment Cable Connector	0784
		27	01	2.E.01		Attitude Measuring Equipment Cable Connector	0784
		27	01	4.D.10		Data Recorder Cable Connector	0785
		27	01	2.E.01		" " " "	0785
		27	01	2.A.03	-12	Spectrometer Cable Connector	0030
		27	01	2.E.01		" " " "	0030
		27	01	4.A.01		Telemetry Cable Connector	0786
		27	01	2.E.01		" " " "	0786
		27	01	2.A.12	-21	Radar Antenna Cable Connector	0804
		27	01	2.A.12	-20	" " " "	0804
		27	01	2.E.01		" " " "	0804
		27	01	4.F.01	-5	Comm/Nav Subsatellite Launch Cable Connector	0788
		27	01	2.E.01		Comm/Nav Subsatellite Launch Cable Connector	0788
		27	01	2.B.03	-2	Comm/Nav Subsatellite Launch Cable Connector	0788

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-12.0-04-2
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 12.0 Plasma Propagation Measurements			MISSION MODE: B				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	
1	(Continued)	27	01	2.E.01		Radio Receiver Cable Connector	0780
		26	01	4.F.01	-5	Radio Receiver Remover	0550
		27	01	4.F.01	-5	Radio Receiver Installer	0551
		27	01	2.E.01		Radio Transmitter Cable Connector	0782
4	Point and align antenna (initial)	10	01	2.A.12	-20	Radar Antenna Pointing Controller	0517
		10	01	2.A.12	-21	" " " "	0517
		10	01	2.B.03	-8	" " " "	0517
6	Launch subsatellite	10	01	4.F.01	-5	Comm/Nav Subsatellite Launch Controller	0489
		10	01	2.B.03	-2	Comm/Nav Subsatellite Launch Controller	0489
7	Reconfigure experiment equipment	26	01	2.A.12	-10	Radio Receiver Remover	0550
		26	01	2.A.12	-19	Radar Receiver Remover	0625
		26	01	4.F.01	-5	" " "	0625
		27	01	2.A.12	-10	Radio Receiver Installer	0551
		27	01	2.A.12	-19	Radar Receiver Installer	0622
		27	01	4.F.01	-5	" " "	0622
		26	01	2.A.12	-10	Radio Receiver Module Remover	0502
		26	01	2.A.12	-19	Radar Receiver Module Remover	0624
		27	01	2.A.12	-10	Radio Receiver Module Installer	0503
		27	01	2.A.12	-10	Radar Receiver Module Installer	0623
		26	01	2.A.12	-21	Radar Antenna Remover	0801
		26	01	2.A.12	-20	" " "	0801
		26	01	4.F.01	-5	" " "	0801

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
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DISCIPLINE: Communications/Navigation						FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility	
EXPERIMENT:						MISSION MODE: B	
12.0 Plasma Propagation Measurements						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	27	01	2.A.12	-20	Radar Antenna Installer	0802
		27	01	2.A.12	-21	" " "	0802
		27	01	4.F.01	-5	" " "	0802

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1
						PAGE B-12.0-10-1
DISCIPLINE: Communications/Navigation FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility						
EXPERIMENT: 12.0 Plasma Propagation Measurements						MISSION MODE: B
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNC NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
8	Repair failed equipment	07	01	2.A.12	-10	Radio Receiver Fault Identifier 0522
		07	01	2.A.12	-19	Radar Receiver Fault Identifier 0685
		07	01	2.C.22		RV Fault Identifier 0789
		07	01	2.A.12	-8	Radio Transmitter Fault Identifier 0521
		07	01	2.A.12	-18	Radar Transmitter Fault Identifier 0683
		07	01	2.A.51		VSWR Measuring Equipment Fault Identifier 0791
		07	01	2.A.52		Attitude Measuring Equipment Fault Identifier 0792
		07	01	4.D.10		Data Recorder Fault Identifier 0793
		07	01	2.A.03	-12	Spectrometer Fault Identifier 0038
		07	01	4.A.01		Telemetry Equipment Fault Identifier 0699
		07	01	2.A.12	-21	Radar Antenna Fault Identifier 0805
		07	01	2.A.12	-20	" " " " 0805
		07	01	2.E.01		Cable Fault Identifier 0794
		07	01	4.F.01	-5	Comm/Nav Subsatellite Fault Identifier 0522
		07	01	4.C.05		Radio Receiver Fault Identifier 0522
		07	01	4.C.05		Radio Transmitter Fault Identifier 0521
		07	01	4.C.05		Radio Antenna Fault Identifier 0524
		07	01	4.C.02		Electronic Equipment Fault Identifier 0795
		28	01	2.A.12	-10	Radio Receiver Repairer 0543
		28	01	2.A.12	-19	Radar Receiver Repairer 0686
		28	01	2.C.22		RV Repairer 0790
		28	01	2.A.12	-8	Radio Transmitter Repairer 0542
		28	01	2.A.12	-18	Radar Transmitter Repairer 0684
		28	01	2.A.51		VSWR Measuring Equipment Repairer 0796
		28	01	2.A.52		Attitude Measuring Equipment Repairer 0797

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-12.0-10-2	
DISCIPLINE: Communications/Navigation				FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility			
EXPERIMENT: 12.0 Plasma Propagation Measurements				MISSION MODE: B			
				BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	(Continued)		28	01	4.D.10	Data Recorder Repairer	0798
			28	01	2.A.03 -12	Spectrometer Repairer	0779
			28	01	4.A.01	Telemetry Equipment Repairer	0700
			28	01	2.A.12 -20	Radar Antenna Repairer	0806
			28	01	2.A.12 -21	" " "	0806
			28	01	2.E.01	Cable Repairer	0799
			28	01	4.F.01 -5	Comm/Nav Subsatellite Repairer	0538
			07	01	4.C.05	Radar Receiver Fault Identifier	0685
			07	01	4.C.05	Radar Transmitter Fault Identifier	0683
			07	01	4.C.05	Radar Antenna Fault Identifier	0805

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DISCIPLINE: Communications/Navigation

FUNCTIONAL PROGRAM ELEMENT (FPE):

C/N-1 Communications/Navigation Research Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

13.0 Multipath Measurements

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1		
						PAGE B-13.0-04-1		
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility					
EXPERIMENT: 13.0 Multipath Measurements			MISSION MODE: B					
						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
1	Perform	system test and checkout	14	01	2.B.03	-10	Comm/Nav System Tester	0813
			14	01	2.A.12	-12	" " " "	0813
			14	01	2.A.12	-23	" " " "	0813
			14	01	2.A.12	-22	" " " "	0813
			14	01	2.A.12	-8	" " " "	0813
			14	01	2.A.12	-9	" " " "	0813
			14	01	2.A.12	-18	" " " "	0813
			14	01	2.D.55		" " " "	0813
			14	01	4.F.01	-6	" " " "	0813
			14	01	4.A.01		" " " "	0813
			14	01	2.A.12	-10	" " " "	0813
			14	01	2.A.12	-11	" " " "	0813
			14	01	2.A.12	-19	" " " "	0813
			01	01	2.B.03	-10	Comm/Nav System Test Monitor	0814
			15	01	2.B.03	-10	Comm/Nav C/D Equipment Self-Test Control Actuator	2042
			01	01	2.B.03	-10	Comm/Nav C/D Equipment Self-Test Display Monitor	2043
2	Set up	antennas	18	01	2.A.12	-12	Radio Antenna Unstower	0815
			22	01	2.A.12	-12	Radio Antenna Translocator	0509
			22	02	2.A.12	-12	" " " "	0509
			22	02	4.E.02		" " " "	0509
			22	02	5.H		" " " "	0509
			20	02	2.A.12	-12	Radio Antenna Assembler	0504
			20	02	4.E.02		" " " "	0504
			20	02	5.H		" " " "	0504
			27	02	2.A.12	-12	Radio Antenna Installer	0510
			27	02	4.E.02		" " " "	0510
			27	02	5.H		" " " "	0510

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
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DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 13.0 Multipath Measurements						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	18	01	2.A.12	-22	Radar Antenna Unstower	0816
		18	01	2.A.12	-23	" " "	0816
		22	01	2.A.12	-22	Radar Antenna Translocator	0817
		22	01	2.A.12	-23	" " "	0817
		22	02	2.A.12	-22	" " "	0817
		22	02	2.A.12	-23	" " "	0817
		22	02	4.E.02		" " "	0817
		22	02	5.H		" " "	0817
		20	02	2.A.12	-22	Radar Antenna Assembler	0818
		20	02	2.A.12	-23	" " "	0818
		20	02	4.E.02		" " "	0818
		20	02	5.H		" " "	0818
		27	02	2.A.12	-22	Radar Antenna Installer	0802
		27	02	2.A.12	-23	" " "	0802
		27	02	4.E.02		" " "	0802
		27	02	5.H		" " "	0802
6	Reconfigure experiment equipment	21	02	2.A.12	-12	Radio Antenna Disassembler	0505
		21	02	4.E.02		" " "	0505
		21	02	5.H		" " "	0505
		20	02	2.A.12	-12	Radio Antenna Assembler	0504
		20	02	4.E.02		" " "	0504
		20	02	5.H		" " "	0504
		26	02	2.A.12	-12	Radio Antenna Remover	0549
		26	02	4.E.02		" " "	0549
		26	02	5.H		" " "	0549
		27	02	2.D.12	-12	Radio Antenna Installer	0510
		27	02	4.E.02		" " "	0510
		27	02	5.H		" " "	0510

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
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DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
13.0 Multipath Measurements			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	21	02	2.A.12	-22	Radar Antenna Disassembler	0819
		21	02	2.A.12	-23	" " "	0819
		21	02	4.E.02		" " "	0819
		21	02	5.H		" " "	0819
		20	02	2.A.12	-22	Radar Antenna Assembler	0818
		20	02	2.A.12	-23	" " "	0818
		20	02	4.E.02		" " "	0818
		20	02	5.H		" " "	0818
		26	02	2.A.12	-22	Radar Antenna Remover	0801
		26	02	2.A.12	-23	" " "	0801
		26	02	4.E.02		" " "	0801
		26	02	5.H		" " "	0801
		27	02	2.A.12	-22	Radar Antenna Installer	0802
		27	02	2.A.12	-23	" " "	0802
		27	02	4.E.02		" " "	0802
		27	02	5.H		" " "	0802
		26	01	2.A.12	-8	Radio Transmitter Remover	0547
		27	01	2.A.12	-8	Radio Transmitter Installer	0548
		26	01	2.A.12	-8	Radio Transmitter Module Remover	0498
		27	01	2.A.12	-8	Radio Transmitter Module Installer	0499
		26	01	2.A.12	-9	Radar Transmitter Remover	0617
		26	01	2.A.12	-18	" " "	0617
		27	01	2.A.12	-9	Radar Transmitter Installer	0614
		27	01	2.A.12	-18	" " "	0614
		26	01	2.A.12	-9	Radar Transmitter Module Remover	0615
		26	01	2.A.12	-18	" " " "	0615
		27	01	2.A.12	-9	Radar Transmitter Module Installer	0616
		27	01	2.A.12	-18	Radar Transmitter Module Installer	0616

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
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DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
13.0 Multipath Measurements					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	26	01	2.D.55		Waveform Modulator Remover	0718
		27	01	2.D.55		Waveform Modulator Installer	0717
		26	01	2.D.55		Waveform Modulator Module Remover	0716
		27	01	2.D.55		Waveform Modulator Module Installer	0715
		26	01	4.F.01	-6	Comm/Nav Subsatellite Module Remover	0558
		27	01	4.F.01	-6	Comm/Nav Subsatellite Module Installer	0559
		26	01	4.A.01		Telemetry Equipment Module Remover	0820
		27	01	4.A.01		Telemetry Equipment Module Installer	0821
		26	01	2.A.12	-10	Radio Receiver Remover	0550
		27	01	2.A.12	-10	Radio Receiver Installer	0551
		26	01	2.A.12	-10	Radio Receiver Module Remover	0502
		27	01	2.A.12	-10	Radio Receiver Module Installer	0503
		26	01	2.A.12	-11	Radar Receiver Remover	0625
		26	01	2.A.12	-19	" " "	0625
		27	01	2.A.12	-11	Radar Receiver Installer	0622
		27	01	2.A.12	-19	" " "	0622
		26	01	2.A.12	-11	Radar Receiver Module Remover	0624
		26	01	2.A.12	-19	" " " "	0624
		27	01	2.A.12	-11	Radar Receiver Module Installer	0623
		27	01	2.A.12	-19	" " " "	0623
		26	01	2.B.03	-10	Comm/Nav C/D Equipment Module Remover	0595
		27	01	2.B.03	-10	Comm/Nav C/D Equipment Module Installer	0596

FLIGHT EXPERIMENT TASK-SKILLS							SERIES C/N-1
							PAGE B-13.0-10-1
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT:			MISSION MODE: B				
13.0 Multipath Measurements					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT			CREW FUNCT.	OPER. ENVIR.	DEPENDENCY		TASK - SKILL
NO.	DESCRIPTION		NO.	NO.	NO.		TITLE
7	Repair failed equipment		07	01	2.A.12	-12	Radio Antenna Fault Identifier
			07	01	4.C.04		" " " "
			07	01	2.A.12	-22	Radar Antenna Fault Identifier
			07	01	2.A.12	-23	" " " "
			07	01	4.C.04		" " " "
			07	01	2.A.12	-8	Radio Transmitter Fault Identifier
			07	01	4.C.04		" " " "
			07	01	2.A.12	-9	Radar Transmitter Fault Identifier
			07	01	2.A.12	-18	" " " "
			07	01	4.C.04		" " " "
			07	01	2.A.12	-10	Radio Receiver Fault Identifier
			07	01	4.C.04		" " " "
			07	01	2.A.12	-11	Radar Receiver Fault Identifier
			07	01	2.A.12	-19	" " " "
			07	01	4.C.04		" " " "
			07	01	2.D.55		Waveform Modulator Fault Identifier
			07	01	4.C.02		Waveform Modulator Fault Identifier
			07	01	4.F.01	-6	Comm/Nav Subsatellite Fault Identifier
			07	01	4.C.02		Comm/Nav Subsatellite Fault Identifier
			07	01	4.A.01		Telemetry Equipment Fault Identifier
			07	01	4.C.02		Telemetry Equipment Fault Identifier
			07	01	2.B.03	-10	Comm/Nav C/D Equipment Fault Identifier
			07	01	4.C.02		Comm/Nav C/D Equipment Fault Identifier

FLIGHT EXPERIMENT TASK-SKILLS						SERIES C/N-1	
						PAGE B-13.0-10-2	
DISCIPLINE: Communications/Navigation			FPE/SUBGROUP: C/N-1 Communications/Navigation Research Facility				
EXPERIMENT: 13.0 Multipath Measurements						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	28	01	2.A.12	-12	Radio Antenna Repairer	0544
		28	01	2.A.12	-22	Radar Antenna Repairer	0806
		28	01	2.A.12	-23	" " "	0806
		28	01	2.A.12	-8	Radio Transmitter Repairer	0542
		28	01	2.A.12	-22	Radar Antenna Repairer	0806
		28	01	2.A.12	-23	" " "	0806
		28	01	2.A.12	-8	Radio Transmitter Repairer	0542
		28	01	2.A.12	-9	Radar Transmitter Repairer	0684
		28	01	2.A.12	-18	" " "	0684
		28	01	2.A.12	-10	Radio Receiver Repairer	0543
		28	01	2.A.12	-11	Radar Receiver Repairer	0686
		28	01	2.A.12	-19	" " "	0686
		28	01	2.D.55		Waveform Modulator Repairer	0723
		28	01	4.F.01	-6	Comm/Nav Subsatellite Repairer	0538
		28	01	4.A.01		Telemetry Equipment Repairer	0700
		28	01	2.B.03	-10	Comm/Nav C/D Equipment Repairer	0537

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

- 1.0 Meteorology and the Atmospheric Sciences
- 3.0 Air and Water Pollution
- 5.0 Natural Disaster Assessment
- 6.0 Ocean Resources

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: A - Shuttle-Sortie, limited duration.

EXPERIMENT:

1.0 Meteorology and the Atmospheric Sciences

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-1.0-04-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Unpackage instruments and sensors	18	01	2.A.03	-14	Spectrometer Unstower	0007
		18	01	2.A.21	-1	Radiometer Unstower	0642
		18	01	2.A.17	-3	Camera Unstower	0292
		18	01	2.A.18		Microscope Unstower	0702
		18	01	2.D.02		Cloud Chamber Unstower	0822
		18	01	2.A.01	-5	Telescope Unstower	0303
		18	01	2.A.03	-13	Spectrometer Unstower	0007
		18	01	2.A.19	-2	Scanner Unstower	0823
		18	01	2.A.21	-2	Radiometer Unstower	0642
		18	01	2.A.23		Polarimeter Unstower	0824
		18	01	2.A.24		Sferics Detector Unstower	0825
		18	01	2.A.22	-1	Scatterometer Unstower	0826
5	Obtain sensor baseline characteristics	03	01	2.A.01	-5	Telescope Inspector	0001
		03	01	2.A.17	-3	Camera Inspector	0294
		03	01	2.A.18		Microscope Inspector	0827
		03	01	2.A.19	-2	Scanner Inspector	0828
		03	01	2.A.21	-1	Radiometer Inspector	0829
		03	01	2.A.22	-1	Scatterometer Inspector	0830
		03	01	2.A.23		Polarimeter Inspector	0831
		03	01	2.A.24		Sferics Detector Inspector	0832
		03	01	2.A.21	-2	Radiometer Inspector	0829
		03	01	2.A.03	-14	Spectrometer Inspector	0833
		03	01	2.A.03	-13	" "	0833
		03	01	2.D.02		Cloud Chamber Inspector	0834
		09	01	2.A.01	-5	Telescope Aligner	0297
		09	01	2.A.17	-3	Camera Aligner	0299
		08	01	2.A.18		Microscope Calibrator	0835
		08	01	2.A.19	-2	Scanner Calibrator	0836
		08	01	2.A.21	-1	Radiometer Calibrator	0837

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-1.0-04-2	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	08	01	2.A.22	-1	Scatterometer Calibrator	0838
		08	01	2.A.23		Polarimeter Calibrator	0839
		08	01	2.A.24		Sferics Detector Calibrator	0840
		08	01	2.A.21	-2	Radiometer Calibrator	0837
		08	01	2.A.03	-14	Spectrometer Calibrator	0072
		08	01	2.A.03	-13	" "	0072
		08	01	2.D.02		Cloud Chamber Calibrator	0841
		08	01	4.C.01		Spectrometer Calibrator	0072
6	Activate the data taking systems	15	01	2.B.04		Camera Control Actuator	0245
		15	01	2.A.17	-3	" " "	0245
		15	01	2.B.04		Scanner Control Actuator	0842
		15	01	2.A.19	-2	" " "	0842
		15	01	2.B.04		Radiometer Control Actuator	0843
		15	01	2.A.21	-2	" " "	0843
		15	01	2.A.21	-1	" " "	0843
		15	01	2.B.04		Spectrometer Control Actuator	0036
		15	01	2.A.03	-13	" " "	0036
		15	01	2.A.03	-14	" " "	0036
		15	01	2.B.04		Polarimeter Control Actuator	0844
		15	01	2.A.23		" " "	0844
		15	01	2.B.04		Sferics Detector Control Actuator	0845
		15	01	2.A.24		" " " "	0845
		15	01	2.B.04		Telescope Control Actuator	0846
		15	01	2.A.01	-5	" " "	0846
		15	01	2.B.04		Computer Control Actuator	0847
		15	01	4.B.01	-3	" " "	0847
		15	01	2.B.04		Scatterometer Control Actuator	0850
		15	01	2.B.22	-1	" " "	0850

FLIGHT EXPERIMENT TASK-SKILLS

SERIES ES-1

PAGE A-1.0-04-3

DISCIPLINE: Earth Observations

FPE/SUBGROUP: ES-1 Earth Observations Facility

EXPERIMENT:

1.0 Meteorology and the Atmospheric Sciences

MISSION MODE: A

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	15	01	2.D.02		Cloud Chamber Control Actuator	0855
		15	01	2.B.04		" " " "	0855
7	Load film into cameras	27	01	2.A.17	-3	Film Cartridge Installer	0046
		27	01	2.A.27		" " "	0046

FLIGHT EXPERIMENT TASK-SKILLS

SERIES ES-1

PAGE A-1.0-05-1

DISCIPLINE: Earth Observations

FPE/SUBGROUP: ES-1 Earth Observations Facility

EXPERIMENT:

1.0 Meteorology and the Atmospheric Sciences

MISSION MODE: A

BASIC FUNCTION: 05 Experiment Shutdown

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Shutdown sensors	16	01	2.B.04		Camera Control Deactuator	0848
		16	01	2.A.17	-3	" " "	0848
		16	01	2.B.04		Scanner Control Deactuator	0849
		16	01	2.A.19	-2	" " "	0849
		16	01	2.B.04		Radiometer Control Deactuator	0673
		16	01	2.A.21	-1	" " "	0673
		16	01	2.A.21	-2	" " "	0673
		16	01	2.A.22	-1	Scatterometer Control Deactuator	0851
		16	01	2.B.04		" " "	0851
		16	01	2.B.04		Spectrometer Control Deactuator	0409
		16	01	2.A.03	-13	" " "	0409
		16	01	2.A.03	-14	" " "	0409
		16	01	2.B.04		Sferics Detector Control	0853
						Deactuator	
		16	01	2.A.24		Sferics Detector Control	0853
						Deactuator	
		16	01	2.B.04		Telescope Control Deactuator	0320
		16	01	2.A.01	-5	" " "	0320
		16	01	2.B.04		Computer Control Deactuator	0319
		16	01	4.B.01	-3	" " "	0319
		16	01	2.B.04		Cloud Chamber Control Deactuator	0854
		16	01	2.D.02		" " " "	0854
		17	01	2.A.17	-3	Camera Stower	0154
		17	01	2.A.19	-2	Scanner Stower	0856
		17	01	2.A.21	-1	Radiometer Stower	0640
		17	01	2.A.21	-2	" "	0640
		17	01	2.A.22	-1	Scatterometer Stower	0857
		17	01	2.A.03	-13	Spectrometer Stower	0063
		17	01	2.A.03	-14	" "	0063
		17	01	2.A.24		Sferics Detector Stower	0858

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1		
							PAGE A-1.0-05-2		
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences				MISSION MODE: A					
				BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
13	(Continued)		17	01	2.A.01	-5	Telescope Stower		0859
			17	01	2.D.02		Cloud Chamber Stower		0860
14	Develop	film	06	01	2.A.27		Film Developer		0328
			06	01	4.B.08		" "		0328
25	Package	data for return to surface	17	01	2.A.27		Film Stower		0852

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-1.0-06-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences			BASIC FUNCTION: 06 Experiment Conduct				MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
1	Visually observe suspended water-droplets and crystals in cloud chamber	02	01	2.D.02	Cloud Physics Process Observer		0861
		02	01	2.B.04	" " " "		0861
		02	01	3.I.01	" " " "		0861
2	Make microscopic observations of suspended water-droplets and crystals in cloud chamber	02	01	2.A.18	Cloud Physics Process Observer		0861
		02	01	2.B.04	" " " "		0861
		02	01	3.I.01	" " " "		0861
		02	01	2.D.02	" " " "		0861
3	Voice record cloud chamber observations	10	01	4.D.05	-1	Tape Recorder Controller	0862
		05	01	3.I.01		Cloud Physics Observation Communicator	0863
8	Acquire target with observation telescope	10	01	2.A.01	-5	Telescope Controller	0337
		02	01	3.C.01		Topographic Feature Observer	0864
		02	01	2.A.01	-5	" " "	0864
		02	01	3.C.02		Atmospheric Feature Observer	0865
		02	01	2.A.01	-5	" " "	0865
		13	01	3.C.01		Topographic Feature Determiner	0866
		13	01	2.A.01	-5	" " "	0866
		13	01	3.C.02		Atmospheric Feature Determiner	0867
9	Evaluate seeing conditions	11	01	3.C.02	-5	Observation Condition Evaluator	0868
		11	01	3.C.01		" " "	0868
		11	01	2.A.01		" " "	0868
		11	01	5.I.01		" " "	0868

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
						PAGE A-1.0-06-2		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences.			MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
10	Track target with observation telescope		10	01	2.A.01	-5	Telescope Controller	0337
			10	01	3.C.01		" "	0337
			10	01	3.C.02		" "	0337
			10	01	5.L.01		" "	0337
			10	01	5.I.01		" "	0337
11	Monitor sensor output electronic quality		01	01	2.B.04	-2	Scanner Data Quality Monitor	0869
			01	01	2.A.19		" " " "	0869
			01	01	2.B.04	-1	Radiometer Data Quality Monitor	0870
			01	01	2.A.21		" " " "	0870
			01	01	2.A.21	-2	" " " "	0870
			01	01	2.B.04		Scatterometer Data Quality Monitor	0871
			01	01	2.A.22	-13	" " " "	0871
			01	01	2.B.04		Spectrometer Data Quality Monitor	0872
			01	01	2.A.03	-14	" " " "	0872
			01	01	2.A.03		" " " "	0872
			01	01	2.B.04	-3	Polarimeter Data Quality Monitor	0873
			01	01	2.A.23		" " " "	0873
			01	01	2.B.04	-5	Sferics Detector Data Quality Monitor	0882
			01	01	2.A.24		Sferics Detector Data Quality Monitor	0882
12	Evaluate proper sensor operation		11	01	2.B.04	-5	Telescope Operation Evaluator	0874
			11	01	2.A.01		" " "	0874
			11	01	2.B.04	-3	Camera Operation Evaluator	0875
			11	01	2.A.17		" " "	0875
			11	01	2.A.27		" " "	0875

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-1.0-06-3	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
12	(Continued)	11	01	2.B.04		Scanner Operation Evaluator	0876
		11	01	2.A.19	-2	" " "	0876
		11	01	2.B.04		Radiometer Operation Evaluator	0877
		11	01	2.A.21	-1	" " "	0877
		11	01	2.A.21	-2	" " "	0877
		11	01	2.B.04		Scatterometer Operation Evaluator	0878
		11	01	2.A.22	-1	" " "	0878
		11	01	2.B.04		Spectrometer Operation Evaluator	0879
		11	01	2.A.03	-13	" " "	0879
		11	01	2.A.03	-14	" " "	0879
		11	01	2.B.04		Polarimeter Operation Evaluator	0880
		11	01	2.A.23		" " "	0880
		11	01	2.B.04		Sferics Detector Operation Evaluator	0881
		11	01	2.A.24		Sferics Detector Operation Evaluator	0881

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-1.0-09-1	
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Clean and service optics	19	01	2.A.01	-5	Telescope Optics Cleaner	0004
		19	01	2.A.03	-13	Spectrometer Optics Cleaner	0095
		19	01	2.A.03	-14	" " "	0095
		19	01	2.A.17		Camera Optics Cleaner	0097
		19	01	2.A.18		Microscope Optics Cleaner	0883
		19	01	2.A.19	-2	Scanner Optics Cleaner	0884

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
						PAGE A-1.0-10-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 1.0 Meteorology and the Atmospheric Sciences					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
17	Perform fault isolation	07	01	2.A.01	Telescope Fault Identifier	0885
		07	01	2.A.03	Spectrometer Fault Identifier	0038
		07	01	2.A.17	Camera Fault Identifier	0886
		07	01	2.A.19	Scanner Fault Identifier	0887
		07	01	2.A.21	Radiometer Fault Identifier	0691
		07	01	2.A.22	Scatterometer Fault Identifier	0888
		07	01	2.A.23	Polarimeter Fault Identifier	0889
		07	01	2.A.24	Sferics Detector Fault Identifier	0890
		07	01	2.A.18	Microscope Fault Identifier	0701
		07	01	2.A.03	Spectrometer Fault Identifier	0038
		07	01	2.A.21	Radiometer Fault Identifier	0691
		07	01	2.B.04	Comm/Nav C/D Equipment Fault Identifier	0575
		07	01	4.C.02	Electronic Equipment Fault Identifier	0795
		07	01	4.C.07	Optical Equipment Fault Identifier	0891

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Air and Water Pollution

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-3.0-04-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Unpackage instruments and sensors	18	01	2.A.17	-3	Camera Unstower	0292
		18	01	2.A.19	-1	Scanner Unstower	0823
		18	01	2.A.19	-2	" "	0823
		18	01	2.A.04	-2	TV Camera Unstower	0054
		18	01	2.A.21	-2	Radiometer Unstower	0642
		18	01	2.A.23		Polarimeter Unstower	0824
		18	01	2.A.03	-15	Spectrometer Unstower	0007
		18	01	2.A.01	-5	Telescope Unstower	0303
		18	01	2.A.17	-4	Camera Unstower	0292
3	Obtain sensor baseline characteristics	03	01	2.A.03	-15	Spectrometer Inspector	0833
		03	01	2.A.01	-5	Telescope Inspector	0001
		03	01	2.A.17	-3	Camera Inspector	0294
		03	01	2.A.17	-4	Camera Inspector	0294
		03	01	2.A.19	-2	Scanner Inspector	0828
		03	01	2.A.04	-2	TV Camera Inspector	0079
		03	01	2.A.19	-1	Scanner Inspector	0828
		03	01	2.A.21	-2	Radiometer Inspector	0829
		03	01	2.A.23		Polarimeter Inspector	0831
		08	01	2.A.03	-15	Spectrometer Calibrator	0072
		08	01	2.A.19	-1	Scanner Calibrator	0836
		08	01	2.A.21	-2	Radiometer Calibrator	0837
		08	01	2.A.23		Polarimeter Calibrator	0839
		09	01	2.A.01	-5	Telescope Aligner	0297
		08	01	4.C.01		Radiometer Calibrator	0837
		08	01	4.C.01		Spectrometer Calibrator	0072
		08	01	4.C.01		Polarimeter Calibrator	0839
		08	01	2.A.19	-2	Scanner Calibrator	0836
		08	01	4.C.01		" "	0836
		08	01	2.A.04	-2	TV Camera Calibrator	0892

FLIGHT EXPERIMENT TASK-SKILLS

SERIES ES-1
PAGE A-3.0-04-2

DISCIPLINE: Earth Observations

FPE/SUBGROUP: ES-1 Earth Observations Facility

EXPERIMENT:

3.0 Air and Water Pollution

MISSION MODE: A

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Activate the data taking system	15	01	2.A.01	-5	Telescope Control Actuator	0846
		15	01	2.A.03	-15	Spectrometer Control Actuator	0036
		15	01	2.A.17	-3	Camera Control Actuator	0245
		15	01	2.A.19	-1	Scanner Control Actuator	0842
		15	01	2.A.21	-2	Radiometer Control Actuator	0843
		15	01	2.A.23		Polarimeter Control Actuator	0844
		15	01	2.A.17	-4	Camera Control Actuator	0245
		15	01	2.B.04		Telescope Control Actuator	0846
		15	01	2.B.04		Spectrometer Control Actuator	0036
		15	01	2.B.04		Camera Control Actuator	0245
		15	01	2.A.19	-2	Scanner Control Actuator	0842
		15	01	2.B.04		" " "	0842
		15	01	2.B.04		Radiometer Control Actuator	0843
		15	01	2.B.04		Polarimeter Control Actuator	0844
		15	01	2.A.04	-2	TV Camera Control Actuator	0899
		15	01	2.B.04		" " " "	0899
		15	01	2.B.04		Computer Control Actuator	0847
		15	01	4.B.01	-3	" " "	0847
5	Load film into cameras	27	01	2.A.17	-3	Film Cartridge Installer	0046
		27	01	2.A.17	-4	" " "	0046
		27	01	2.A.27		" " "	0046
17	Perform instrument modification	21	01	2.A.17	-3	Camera Disassembler	0893
		21	01	2.A.17	-4	" "	0893
		20	01	2.A.17	-3	Camera Assembler	0894
		20	01	2.A.17	-4	" "	0894
		26	01	2.A.17	-3	Camera Module Remover	0158
		26	01	2.A.17	-4	" " "	0158

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-3,0-04-3	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A				
			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	(Continued)	27	01	2.A.17	-3	Camera Module Installer	0160
		27	01	2.A.17	-4	" " "	0160
		21	01	2.A.04	-2	TV Camera Disassembler	0900
		20	01	2.A.04		TV Camera Assembler	0901
		26	01	2.A.04		TV Camera Module Remover	0111
		27	01	2.A.04		TV Camera Module Installer	0112
		21	01	2.A.19	-1	Scanner Disassembler	0902
		21	01	2.A.19	-2	" "	0902
		20	01	2.A.19	-1	Scanner Assembler	0903
		20	01	2.A.19	-2	" "	0903
		26	01	2.A.19	-1	Scanner Module Remover	0904
		26	01	2.A.19	-2	" " "	0904
		27	01	2.A.19	-1	Scanner Module Installer	0905
		27	01	2.A.19	-2	" " "	0905
		21	01	2.A.21	-2	Radiometer Disassembler	0635
		20	01	2.A.21	-2	Radiometer Assembler	0634
		26	01	2.A.21	-2	Radiometer Module Remover	0638
		27	01	2.A.21	-2	Radiometer Module Installer	0637
		21	01	2.A.23		Polarimeter Disassembler	0906
		20	01	2.A.23		Polarimeter Assembler	0907
		26	01	2.A.23		Polarimeter Module Remover	0908
		27	01	2.A.23		Polarimeter Module Installer	0909
		21	01	2.A.03	-15	Spectrometer Disassembler	0910
		20	01	2.A.03	-15	Spectrometer Assembler	0911
		26	01	2.A.03	-15	Spectrometer Module Remover	0109
		27	01	2.A.03	-15	Spectrometer Module Installer	0110
		21	01	2.A.01	-5	Telescope Disassembler	0912
		20	01	2.A.01	-5	Telescope Assembler	0913
		26	01	2.A.01	-5	Telescope Module Remover	0187
		27	01	2.A.01	-5	Telescope Module Installer	0188

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-3.0-04-4
DISCIPLINE: Earth Observations		FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 3.0 Air and Water Pollution						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE NO.	
18	Select proper sensor bands/band-widths	02	01	2.B.04		Telescope Presentation Observer 0895	
		02	01	2.A.01	-5	" " " 0895	
		02	01	3.C.02		" " " 0895	
		02	01	3.C.03		" " " 0895	
		02	01	3.C.04		" " " 0895	
		02	01	2.B.04		TV Presentation Observer 0896	
		02	01	2.A.04	-2	" " " 0896	
		02	01	3.C.02		" " " 0896	
		02	01	3.C.03		" " " 0896	
		02	01	3.C.04		" " " 0896	
		02	01	2.B.04		Scanner Presentation Observer 0897	
		02	01	2.A.19	-1	" " " 0897	
		02	01	2.A.19	-2	" " " 0897	
		02	01	3.C.02		" " " 0897	
		02	01	3.C.03		" " " 0897	
		02	01	3.C.04		" " " 0897	
		02	01	2.B.04		Radiometer Presentation Observer 0898	
		02	01	2.A.21	-2	" " " 0898	
		02	01	3.C.02		" " " 0898	
		02	01	3.C.03		" " " 0898	
		02	01	3.C.04		" " " 0898	
		02	01	2.B.04		Polarimeter Presentation Observer 0914	
		02	01	2.A.23		" " " 0914	
		02	01	3.C.02		" " " 0914	
		02	01	3.C.03		" " " 0914	
		02	01	3.C.04		" " " 0914	
		02	01	2.B.04		Spectrometer Presentation Observer 0915	
		02	01	2.A.03	-15	Spectrometer Presentation Observer 0915	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-3.0-04-5	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
18	(Continued)		02	01	3.C.02	Spectrometer Presentation Observer	0915
			02	01	3.C.03	Spectrometer Presentation Observer	0915
			02	01	3.C.04	Spectrometer Presentation Observer	0915
			13	01	2.A.01 -5	Telescope Mode Selector	0265
			13	01	3.C.02	" " "	0265
			13	01	3.C.03	" " "	0265
			13	01	3.C.04	" " "	0265
			13	01	4.B.01 -3	" " "	0265
			13	01	2.A.17 -3	Camera Mode Selector	0271
			13	01	2.A.17 -4	" " "	0271
			13	01	3.C.02	" " "	0271
			13	01	3.C.03	" " "	0271
			13	01	3.C.04	" " "	0271
			13	01	2.A.04 -2	TV Mode Selector	0268
			13	01	3.C.02	" " "	0268
			13	01	3.C.03	" " "	0268
			13	01	3.C.04	" " "	0268
			13	01	2.A.19 -1	Scanner Mode Selector	0916
			13	01	2.A.19 -2	" " "	0916
			13	01	3.C.02	" " "	0916
			13	01	3.C.03	" " "	0916
			13	01	3.C.04	" " "	0916
			13	01	2.A.21 -2	Radiometer Mode Selector	0917
			13	01	3.C.02	" " "	0917
			13	01	3.C.03	" " "	0917
			13	01	3.C.04	" " "	0917
			13	01	2.A.23	Polarimeter Mode Selector	0918
			13	01	3.C.02	" " "	0918

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
DISCIPLINE: Earth Observations						PAGE A-3.0-04-6	
EXPERIMENT: 3.0 Air and Water Pollution						MISSION MODE: A	
FPE/SUBGROUP: ES-1 Earth Observations Facility						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	(Continued)	13	01	3.C.03	-15	Polarimeter Mode Selector	0918
		13	01	3.C.04		" " "	0918
		13	01	2.A.03		Spectrometer Mode Selector	0267
		13	01	3.C.02		" " "	0267
		13	01	3.C.03		" " "	0267
		13	01	3.C.04		" " "	0267

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-3.0-05-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A				
			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Shutdown sensors	16	01	2.B.04		Telescope Control Deactuator	0320
		16	01	2.A.01	-5	" " "	0320
		16	01	2.B.04		Spectrometer Control Deactuator	0409
		16	01	2.A.03	-15	" " "	0409
		16	01	2.B.04		Camera Control Deactuator	0848
		16	01	2.A.17	-3	" " "	0848
		16	01	2.A.17	-4	" " "	0848
		16	01	2.B.04		Scanner Control Deactuator	0849
		16	01	2.A.19	-1	" " "	0849
		16	01	2.A.19	-2	" " "	0849
		16	01	2.B.04		Radiometer Control Deactuator	0673
		16	01	2.A.21	-2	" " "	0673
		16	01	2.B.04		Polarimeter Control Deactuator	0919
		16	01	2.A.23		" " "	0919
		16	01	2.B.04		TV Camera Control Deactuator	0672
		16	01	2.A.04	-2	" " " "	0672
13	Develop film	06	01	2.A.17	-3	Film Developer	0328
		06	01	2.A.17	-4	" "	0328
		06	01	4.B.08		" "	0328
14	Package data for return to surface	17	01	2.A.17	-3	Film Stower	0852
		17	01	2.A.17	-4	" "	0852

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-3.0-06-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Evaluate photographic quality of data	11	01	2.A.17	-3	Data Photographic Quality Evaluator	0920
		11	01	2.A.17	-4	Data Photographic Quality Evaluator	0920
		11	01	2.A.27		Data Photographic Quality Evaluator	0920
		11	01	3.C.02		Data Photographic Quality Evaluator	0920
		11	01	3.C.03		Data Photographic Quality Evaluator	0920
		11	01	3.C.04		Data Photographic Quality Evaluator	0920
6	Acquire target with observation telescope	02	01	2.B.04		Telescope Presentation Observer	0895
		02	01	2.A.01	-5	" " "	0895
		02	01	4.B.01	-3	" " "	0895
		02	01	3.C.02		" " "	0895
		02	01	3.C.03		" " "	0895
		02	01	3.C.04		" " "	0895
		10	01	2.B.04		Telescope Pointing Controller	0921
		10	01	2.A.01	-5	" " "	0921
		10	01	4.B.01	-3	" " "	0921
		10	01	3.C.02		" " "	0921
		10	01	3.C.03		" " "	0921
		10	01	3.C.04		" " "	0921
7	Evaluate seeing conditions	11	01	3.C.02		Observation Condition Evaluator	0868
		11	01	3.C.03		" " "	0868
		11	01	3.C.04		" " "	0868

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
						PAGE A-3.0-06-2		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
7	(Continued)		11	01	2.A.01	-5	Observation Condition Evaluator	0868
			11	01	5.I.01		" " "	0868
8	Activate sensors		15	01	2.B.04		Camera Control Actuator	0245
			15	01	2.A.17	-3	" " "	0245
			15	01	2.A.17	-4	" " "	0245
			15	01	2.B.04		TV Camera Control Actuator	0899
			15	01	2.A.04	-2	" " " "	0899
			15	01	2.B.04		Scanner Control Actuator	0842
			15	01	2.A.19	-1	" " "	0842
			15	01	2.A.19	-2	" " "	0842
			15	01	2.B.04		Radiometer Control Actuator	0843
			15	01	2.A.21	-2	" " "	0843
			15	01	2.B.04		Polarimeter Control Actuator	0844
			15	01	2.A.21	-2	" " "	0844
			15	01	2.B.04		Spectrometer Control Actuator	0036
			15	01	2.A.03	-15	" " "	0036
			15	01	2.B.04		Telescope Control Actuator	0846
			15	01	2.A.03	-5	" " "	0846
			15	01	4.B.01	-3	" " "	0846
9	Track target with observation telescope		02	01	2.B.04		Telescope Presentation Observer	0895
			02	01	2.A.01	-5	" " "	0895
			02	01	4.B.01	-3	" " "	0895
			02	01	3.C.02		" " "	0895
			02	01	3.C.03		" " "	0895
			02	01	3.C.04		" " "	0895
			10	01	2.B.04		Telescope Pointing Controller	0921

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-3.0-06-3	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution					MISSION MODE: A		
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	(Continued)	10	01	2.A.01	-5	Telescope Pointing Controller	0921
		10	01	4.B.01	-3	" " "	0921
10	Monitor sensor output electronic quality	01	01	2.B.04		TV Data Quality Monitor	0922
		01	01	2.A.04	-2	" " " "	0922
		01	01	2.B.04		Scanner Data Quality Monitor	0869
		01	01	2.A.19	-1	" " " "	0869
		01	01	2.A.19	-2	" " " "	0869
		01	01	2.B.04		Radiometer Data Quality Monitor	0870
		01	01	2.A.21	-2	" " " "	0870
		01	01	2.B.04		Polarimeter Data Quality Monitor	0873
		01	01	2.A.23		" " " "	0873
		01	01	2.B.04		Spectrometer Data Quality Monitor	0872
		01	01	2.A.03	-15	" " " "	0872
11	Evaluate proper sensor operation	11	01	2.A.27		Camera Operation Evaluator	0875
		11	01	2.A.17	-3	" " "	0875
		11	01	2.A.17	-4	" " "	0875
		11	01	2.B.04		TV Camera Operation Evaluator	0923
		11	01	2.A.04	-2	" " " "	0923
		11	01	2.B.04		Scanner Operation Evaluator	0876
		11	01	2.A.19	-1	" " " "	0876
		11	01	2.A.19	-2	" " " "	0876
		11	01	2.B.04		Radiometer Operation Evaluator	0877
		11	01	2.A.21	-2	" " " "	0877
		11	01	2.B.04		Polarimeter Operation Evaluator	0880
		11	01	2.A.23		" " " "	0880
		11	01	2.B.04		Spectrometer Operation Evaluator	0879
		11	01	2.A.03	-15	" " " "	0879

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
						PAGE A-3.0-06-4		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
11	(Continued)	11	01	2.B.04	Telescope Operation Evaluator			0874
		11	01	2.A.01 -5	" " "			0874
		11	01	4.B.01 -3	" " "			0874

FLIGHT EXPERIMENT TASK-SKILLS

SERIES ES-1

PAGE A-3.0-09-1

DISCIPLINE: Earth Observations

FPE/SUBGROUP: ES-1 Earth Observations Facility

EXPERIMENT:

MISSION MODE: A

3.0 Air and Water Pollution

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	Clean and service optics	19	01	2.A.01	-5	Telescope Optics Cleaner	0004
		19	01	2.A.03	-15	Spectrometer Optics Cleaner	0095
		19	01	2.A.17	-3	Camera Optics Cleaner	0097
		19	01	2.A.17	-4	" " "	0097
		19	01	2.A.19	-1	Scanner Optics Cleaner	0884
		19	01	2.A.21	-2	Radiometer Optics Cleaner	0924
		19	01	2.A.23		Polarimeter Optics Cleaner	0925
		19	01	2.A.19	-2	Scanner Optics Cleaner	0884
		19	01	2.A.04	-2	TV Camera Optics Cleaner	0096

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-3.0-10-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A				
BASIC FUNCTION: 10 Unscheduled Maintenance							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Perform fault isolation	07	01	2.A.01	-5	Telescope Fault Identifier	0885
		07	01	2.A.03	-15	Spectrometer Fault Identifier	0038
		07	01	2.A.17	-3	Camera Fault Identifier	0886
		07	01	2.A.17	-4	" " "	0886
		07	01	2.A.19	-1	Scanner Fault Identifier	0887
		07	01	2.A.21	-2	Radiometer Fault Identifier	0691
		07	01	2.A.23		Polarimeter Fault Identifier	0889
		07	01	2.A.19	-2	Scanner Fault Identifier	0887
		07	01	2.A.04	-2	TV Camera Fault Identifier	0689
		07	01	4.B.01	-3	Computer Fault Identifier	0523
		07	01	2.B.04		Earth Survey C/D Equipment Fault Identifier	0928
		07	01	4.C.02		Electronic Equipment Fault Identifier	0795
		07	01	4.C.07		Optical Equipment Fault Identifier	0891
17	Replace failed modules, bulbs, small parts	26	01	2.A.01	-5	Telescope Module Remover	0187
		27	01	2.A.01	-5	Telescope Module Installer	0188
		26	01	2.A.03	-15	Spectrometer Module Remover	0109
		27	01	2.A.03	-15	Spectrometer Module Installer	0110
		26	01	2.A.17	-3	Camera Module Remover	0158
		27	01	2.A.17	-3	Camera Module Installer	0160
		26	01	2.A.17	-4	Camera Module Remover	0158
		27	01	2.A.17	-4	Camera Module Installer	0160
		26	01	2.A.19	-1	Scanner Module Remover	0904
		27	01	2.A.19	-1	Scanner Module Installer	0905
		26	01	2.A.21	-2	Radiometer Module Remover	0638
		27	01	2.A.21	-2	Radiometer Module Installer	0637
		26	01	2.A.23		Polarimeter Module Remover	0908

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-3.0-10-2	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 3.0 Air and Water Pollution			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
17	(Continued)	27	01	2.A.23		Polarimeter Module Installer	0909
		26	01	2.A.19	-2	Scanner Module Remover	0904
		27	01	2.A.19	-2	Scanner Module Installer	0905
		26	01	2.A.04	-2	TV Camera Module Remover	0111
		27	01	2.A.04	-2	TV Camera Module Installer	0112
		26	01	4.B.01	-3	Computer Module Remover	0519
		27	01	4.B.01	-3	Computer Module Installer	0520
		26	01	2.B.04		Earth Survey C/D Equipment Module Remover	0926
		27	01	2.B.04		Earth Survey C/D Equipment Module Installer	0927

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

5.0 Natural Disaster Assessment

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-5.0-04-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
3	Unpackage instruments and sensors	18	01	2.A.01	-5	Telescope Unstower	0303
		18	01	2.A.04	-2	TV Camera Unstower	0054
		18	01	2.A.17	-3	Camera Unstower	0292
		18	01	2.A.17	-4	" "	0292
		18	01	2.A.19	-1	Scanner Unstower	0823
		18	01	2.A.19	-2	" "	0823
		18	01	2.A.21	-2	Radiometer Unstower	0642
		18	01	2.A.24		Sferics Detector Unstower	0825
		18	01	2.A.12	-16	Radar Transmitter Unstower	0611
		18	01	2.A.12	-17	Radar Receiver Unstower	0628
4	Obtain sensor baseline characteristics	03	01	2.A.01	-5	Telescope Inspector	0001
		03	01	2.A.04	-2	TV Camera Inspector	0079
		03	01	2.A.17	-3	Camera Inspector	0294
		03	01	2.A.17	-4	" "	0294
		03	01	2.A.19	-1	Scanner Inspector	0828
		03	01	2.A.19	-2	" "	0828
		03	01	2.A.21	-2	Radiometer Inspector	0829
		03	01	2.A.24		Sferics Detector Inspector	0832
		03	01	2.A.12	-16	Radar Transmitter Inspector	0932
		03	01	2.A.12	-17	Radar Receiver Inspector	0933
		08	01	2.A.19	-1	Scanner Calibrator	0836
		08	01	2.A.19	-2	" "	0836
		08	01	2.A.21	-2	Radiometer Calibrator	0837
		08	01	2.A.24		Sferics Detector Calibrator	0840
		08	01	4.C.01		Scanner Calibrator	0836
		08	01	4.C.01		Radiometer Calibrator	0837
		08	01	4.C.01		Sferics Detector Calibrator	0840
		09	01	2.A.01	-5	Telescope Aligner	0297

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
						PAGE A-5.0-04-2
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 5.0 Natural Disaster Assessment					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4	(Continued)	09	01	2.A.04	-2	TV Camera Aligner 0929
		09	01	2.A.17	-3	Camera Aligner 0299
		09	01	2.A.17	-4	" " 0299
		09	01	2.A.12	-16	Radar Transmitter Aligner 0930
		09	01	2.A.12	-17	Radar Receiver Aligner 0931
5	Activate the data taking system	15	01	2.B.04		Telescope Control Actuator 0846
		15	01	2.A.01	-5	" " " 0846
		15	01	4.B.01	-3	" " " 0846
		15	01	2.B.04		Camera Control Actuator 0245
		15	01	2.A.17	-3	" " " 0245
		15	01	2.A.17	-4	" " " 0245
		15	01	2.B.04		TV Camera Control Actuator 0899
		15	01	2.A.04	-2	" " " " 0899
		15	01	2.B.04		Scanner Control Actuator 0842
		15	01	2.A.19	-1	" " " 0842
		15	01	2.A.19	-2	" " " 0842
		15	01	2.B.04		Radar Transmitter Control Actuator 0935
		15	01	2.A.12	-16	" " " " 0935
		15	01	2.B.04		Radar Receiver Control Actuator 0936
		15	01	2.A.12	-17	" " " " 0936
		15	01	2.B.04		Radiometer Control Actuator 0843
		15	01	2.A.21	-2	" " " 0843
		15	01	2.B.04		Sferics Detector Control Actuator 0845
		15	01	2.A.24		" " " " 0845
6	Load film into cameras	26	01	2.A.17	-3	Film Cartridge Installer 0046
		26	01	2.A.17	-4	" " " 0046
		26	01	2.A.27		" " " 0046

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-5.0-04-3	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
19	Select proper sensor bands/band-widths	02	01	2.A.17		Telescope Presentation Observer	0895
		02	01	2.A.01	-5	" " "	0895
		02	01	3.C.05		" " "	0895
		02	01	3.C.06		" " "	0895
		02	01	2.B.04		TV Presentation Observer	0896
		02	01	2.A.04	-2	" " "	0896
		02	01	3.C.05		" " "	0896
		02	01	3.C.06		" " "	0896
		02	01	2.B.04		Scanner Presentation Observer	0897
		02	01	2.A.19	-1	" " "	0897
		02	01	2.A.19	-2	" " "	0897
		02	01	3.C.05		" " "	0897
		02	01	3.C.06		" " "	0897
		02	01	2.B.04		Radar Presentation Observer	0934
		02	01	2.A.12	-16	" " "	0934
		02	01	2.A.12	-17	" " "	0934
		02	01	3.C.05		" " "	0934
		02	01	3.C.06		" " "	0934
		02	01	2.B.04		Radiometer Presentation Observer	0898
		02	01	2.A.21	-2	" " "	0898
		02	01	3.C.05		" " "	0898
		02	01	3.C.06		" " "	0898
		02	01	2.B.04		Sferics Detector Presentation Observer	0937
		02	01	2.A.24		Sferics Detector Presentation Observer	0937
		02	01	3.C.05		Sferics Detector Presentation Observer	0937
		02	01	3.C.06		Sferics Detector Presentation Observer	0937

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1			
							PAGE A-5.0-04-4			
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility							
EXPERIMENT: 5.0 Natural Disaster Assessment			BASIC FUNCTION: 04 Experiment Setup					MISSION MODE: A		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL					
NO.	DESCRIPTION				TITLE			NO.		
19	(Continued)	13	01	2.B.04		Telescope Mode Selector			0265	
		13	01	2.A.01	-5	"	"	"	0265	
		13	01	4.B.01	-3	"	"	"	0265	
		13	01	3.C.05		"	"	"	0265	
		13	01	3.C.06		"	"	"	0265	
		13	01	2.A.17	-3	Camera Mode Selector			0271	
		13	01	2.A.17	-4	"	"	"	0271	
		13	01	3.C.05		"	"	"	0271	
		13	01	3.C.06		"	"	"	0271	
		13	01	2.B.04		TV Mode Selector			0268	
		13	01	2.A.04	-2	"	"	"	0268	
		13	01	3.C.05		"	"	"	0268	
		13	01	3.C.06		"	"	"	0268	
		13	01	2.B.04		Scanner Mode Selector			0916	
		13	01	2.A.19	-1	"	"	"	0916	
		13	01	2.A.19	-2	"	"	"	0916	
		13	01	3.C.05		"	"	"	0916	
		13	01	3.C.06		"	"	"	0916	
		13	01	2.B.04		Radar Transmitter Mode Selector			0938	
		13	01	2.A.12	-16	"	"	"	"	0938
		13	01	3.C.05		"	"	"	"	0938
		13	01	3.C.06		"	"	"	"	0938
		13	01	2.B.04		Radar Receiver Mode Selector			0939	
		13	01	2.A.12	-17	"	"	"	"	0939
		13	01	3.C.05		"	"	"	"	0939
		13	01	3.C.06		"	"	"	"	0939
		13	01	2.B.04		Radiometer Mode Selector			0917	
		13	01	2.A.21	-2	"	"	"	"	0917
		13	01	3.C.05		"	"	"	"	0917
		13	01	3.C.06		"	"	"	"	0917

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1			
						PAGE A-5.0-04-5			
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility						
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A						
						BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE			NO.	
19	(Continued)	13	01	2.B.04	Sferics Detector Mode Selector			0940	
		13	01	2.A.24	"	"	"	"	0940
		13	01	3.C.05	"	"	"	"	0940
		13	01	3.C.06	"	"	"	"	0940

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
						PAGE A-5.0-05-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 5.0 Natural Disaster Assessment					MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
12	Shutdown sensors	16	01	2.B.04	Camera Control Deactuator	0848
		16	01	2.A.17 -3	" " "	0848
		16	01	2.A.17 -4	" " "	0848
		16	01	2.B.04	TV Camera Control Deactuator	0672
		16	01	2.A.04 -2	" " " "	0672
		16	01	2.B.04	Scanner Control Deactuator	0849
		16	01	2.A.19 -1	" " "	0849
		16	01	2.A.19 -2	" " "	0849
		16	01	2.B.04	Radar Transmitter Control Deactuator	0664
		16	01	2.A.12 -16	Radar Transmitter Control Deactuator	0664
		16	01	2.B.04	Radar Receiver Control Deactuator	0666
		16	01	2.A.12 -17	" " " "	0666
		16	01	2.B.04	Radiometer Control Deactuator	0673
		16	01	2.A.21 -2	" " "	0673
		16	01	2.B.04	Sferics Detector Control Deactuator	0853
		16	01	2.A.24	Sferics Detector Control Deactuator	0853
		16	01	2.B.04	Telescope Control Deactuator	0320
		16	01	2.A.01 -5	" " "	0320
		16	01	4.B.01 -3	" " "	0320
13	Transmit selected data to ground	05	01	4.A.02	Radio Communicator	0206
		05	01	3.C.05	" "	0206
		05	01	3.C.06	" "	0206
		10	01	4.A.01	Telemetry Equipment Controller	1104

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1	
							PAGE A-5.0-05-2	
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment				MISSION MODE: A				
				BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
14	Develop	film	06 06	01 01	2.A.27 4.B.08	Film Developer " "	0328 0328	
15	Package	data for return to surface	17	01	2.A.27	Film Stower	0852	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-5.0-06-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A				
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Identify forest fire smoke in photographs	04	01	2.A.27		Forest Fire Disaster Identifier	0941
		04	01	2.A.17	-3	" " " "	0941
		04	01	2.A.17	-4	" " " "	0941
		04	01	3.C.05		" " " "	0941
		04	01	3.C.06		" " " "	0941
2	Describe disaster observations to ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.C.05		" "	0206
		05	01	3.C.06		" "	0206
7	Acquire target with observation telescope	02	01	2.B.04		Telescope Presentation Observer	0895
		02	01	2.A.01	-5	" " "	0895
		02	01	4.B.01	-3	" " "	0895
		02	01	3.C.05		" " "	0895
		02	01	3.C.06		" " "	0895
		10	01	2.B.04		Telescope Pointing Controller	0921
		10	01	2.A.01	-5	" " "	0921
		10	01	4.B.01	-3	" " "	0921
		10	01	3.C.05		" " "	0921
		10	01	3.C.06		" " "	0921
8	Evaluate seeing conditions	11	01	5.I.01		Observation Condition Evaluator	0868
		11	01	3.C.05		" " "	0868
		11	01	3.C.06		" " "	0868
		11	01	2.B.04		" " "	0868
		11	01	2.A.01	-5	" " "	0868

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-5.0-06-2
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Activate sensors	15	01	2.B.04		Camera Control Actuator	0245
		15	01	2.A.17	-3	" " "	0245
		15	01	2.A.17	-4	" " "	0245
		15	01	2.B.04		TV Camera Control Actuator	0899
		15	01	2.A.04	-2	" " " "	0899
		15	01	2.B.04		Scanner Control Actuator	0842
		15	01	2.A.19	-1	" " "	0842
		15	01	2.A.19	-2	" " "	0842
		15	01	2.B.04		Radar Transmitter Control Actuator	0935
		15	01	2.A.12	-16	" " " "	0935
		15	01	2.B.04		Radar Receiver Control Actuator	0936
		15	01	2.A.12	-17	" " " "	0936
		15	01	2.B.04		Radiometer Control Actuator	0843
		15	01	2.A.21	-2	" " "	0843
		15	01	2.B.04		Sferics Detector Control Actuator	0845
		15	01	2.A.24		" " " "	0845
		15	01	2.B.04		Telescope Control Actuator	0846
		15	01	2.A.01	-5	" " "	0846
		15	01	4.B.01	-3	" " "	0846
10	Track target with observation telescope	02	01	2.B.04		Telescope Presentation Observer	0895
		02	01	2.A.01	-5	" " "	0895
		02	01	4.B.01	-3	" " "	0895
		02	01	3.C.05		" " "	0895
		02	01	3.C.06		" " "	0895
		10	01	2.B.04		Telescope Pointing Controller	0921
		10	01	2.A.01	-5	" " "	0921
		10	01	4.B.01	-3	" " "	0921
		10	01	3.C.05		" " "	0921
		10	01	3.C.06		" " "	0921

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-5.0-06-3	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	Monitor sensor output electronic quality	01	01	2.B.04		TV Data Quality Monitor	0922
		01	01	2.A.04	-2	" " " "	0922
		01	01	2.B.04		Scanner Data Quality Monitor	0869
		01	01	2.A.19	-1	" " " "	0869
		01	01	2.A.19	-2	" " " "	0869
		01	01	2.B.04		Radar Data Quality Monitor	0944
		01	01	2.A.12	-16	" " " "	0944
		01	01	2.A.12	-17	" " " "	0944
		01	01	2.B.04		Radiometer Data Quality Monitor	0870
		01	01	2.A.21	-2	" " " "	0870
		01	01	2.B.04		Sferics Detector Data Quality Monitor	0882
		01	01	2.A.24		Sferics Detector Data Quality Monitor	0882

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
						PAGE A-5.0-09-1		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 5.0 Natural Disaster Assessment			MISSION MODE: A					
			BASIC FUNCTION: 09 Scheduled Maintenance					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
16	Clean and service optics		19	01	2.A.01	-5	Telescope Optics Cleaner	0004
			19	01	2.A.04	-2	TV Camera Optics Cleaner	0096
			19	01	2.A.17	-3	Camera Optics Cleaner	0097
			19	01	2.A.17	-4	" " "	0097
			19	01	2.A.19	-1	Scanner Optics Cleaner	0884
			19	01	2.A.19	-2	" " "	0884
			19	01	2.A.21	-2	Radiometer Optics Cleaner	0924
			19	01	2.A.24		Sferics Detector Optics Cleaner	0945

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-5.0-10-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 5.0 Natural Disaster Assessment						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	Perform fault isolation	07	01	2.A.01	-5	Telescope Fault Identifier	0885
		07	01	2.A.04	-2	TV Camera Fault Identifier	0689
		07	01	2.A.17	-3	Camera Fault Identifier	0886
		07	01	2.A.17	-4	" " "	0886
		07	01	2.A.19	-1	Scanner Fault Identifier	0887
		07	01	2.A.19	-2	" " "	0887
		07	01	2.A.21	-2	Radiometer Fault Identifier	0691
		07	01	2.A.24		Sferics Detector Fault Identifier	0890
		07	01	2.A.12	-16	Radar Transmitter Fault Identifier	0683
		07	01	4.C.04		" " " "	0683
		07	01	2.A.12	-17	Radar Receiver Fault Identifier	0685
		07	01	4.C.04		" " " "	0685
		07	01	4.B.01	-3	Computer Fault Identifier	0523
		07	01	2.B.04		Earth Surveys C/D Equipment Fault Identifier	0928
		07	01	4.C.02		Electronic Equipment Fault Identifier	0795
		07	01	4.C.07		Optical Equipment Fault Identifier	0891
18	Replace failed modules, bulbs and small parts	26	01	2.A.17	-3	Camera Module Remover	0158
		26	01	2.A.17	-4	" " "	0158
		27	01	2.A.17	-3	Camera Module Installer	0160
		27	01	2.A.17	-4	" " "	0160
		26	01	2.A.04	-2	TV Camera Module Remover	0111
		27	01	2.A.04	-2	TV Camera Module Installer	0112
		26	01	2.A.19	-1	Scanner Module Remover	0904
		26	01	2.A.19	-2	" " "	0904

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-5.0-10-2	
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 5.0 Natural Disaster Assessment				MISSION MODE: A			
				BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	(Continued)	27	01	2.A.19	-1	Scanner Module Installer	0905
		27	01	2.A.19	-2	" " "	0905
		26	01	2.A.12	-16	Radar Transmitter Module Remover	0615
		27	01	2.A.12	-16	Radar Transmitter Module Installer	0616
		26	01	2.A.12	-17	Radar Receiver Module Remover	0624
		27	01	2.A.12	-17	Radar Receiver Module Installer	0623
		26	01	2.A.21	-2	Radiometer Module Remover	0638
		27	01	2.A.21	-2	Radiometer Module Installer	0637
		26	01	2.A.24		Sferics Detector Module Remover	0946
		27	01	2.A.24		Sferics Detector Module Installer	0947
		26	01	2.A.01	-5	Telescope Module Remover	0187
		27	01	2.A.01	-5	Telescope Module Installer	0188
		26	01	4.B.01	-3	Computer Module Remover	0519
		27	01	4.B.01	-3	Computer Module Installer	0520
		26	01	2.B.04		Earth Surveys C/D Equipment Module Remover	0926
		27	01	2.B.04		Earth Surveys C/D Equipment Module Installer	0927

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DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

6.0 Ocean Resources

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
DISCIPLINE: Earth Observations				PAGE A-6.0-04-1				
EXPERIMENT: 6.0 Ocean Resources				FPE/SUBGROUP: ES-1 Earth Observations Facility		MISSION MODE: A		
						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.		DESCRIPTION				TITLE	NO.	
2		Unpackage Instruments and sensors	18	01	2.A.04	-2	TV Camera Unstower	0054
			18	01	2.A.17	-3	Camera Unstower	0292
			18	01	2.A.19	-1	Scanner Unstower	0823
			18	01	2.A.22	-1	Scatterometer Unstower	0826
			18	01	2.A.19	-2	Scanner Unstower	0823
3		Obtain sensor baseline characteristics	03	01	2.A.04	-2	TV Camera Inspector	0079
			03	01	2.A.17	-3	Camera Inspector	0294
			03	01	2.A.19	-1	Scanner Inspector	0828
			03	01	2.A.22	-1	Scatterometer Inspector	0830
			03	01	2.A.19	-2	Scanner Inspector	0828
			08	01	2.A.22	-1	Scatterometer Calibrator	0838
			09	01	2.A.04	-2	TV Camera Aligner	0929
			08	01	2.A.19	-1	Scanner Calibrator	0836
			08	01	2.A.19	-2	" "	0836
			09	01	2.A.17	-3	Camera Aligner	0299
			08	01	4.C.01		Scanner Calibrator	0836
			08	01	4.C.01		Scatterometer Calibrator	0838
4		Activate data taking system	15	01	2.B.04		Camera Control Actuator	0245
			15	01	2.A.17	-3	" " "	0245
			15	01	2.B.04		TV Camera Control Actuator	0899
			15	01	2.A.04	-2	" " " "	0899
			15	01	2.B.04		Scanner Control Actuator	0842
			15	01	2.A.19	-1	" " "	0842
			15	01	2.A.19	-2	" " "	0842
			15	01	2.B.04		Scatterometer Control Actuator	0850
			15	01	2.A.22	-1	" " "	0850

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-6.0-04-2	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 6.0 Ocean Resources					MISSION MODE: A		
					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Load film into cameras	27	01	2.A.17	-3	Film Cartridge Installer	0046
		27	01	2.A.27		" " "	0046
16	Select proper sensor bands/band-widths	02	01	2.B.04		TV Presentation Observer	0896
		02	01	2.A.04	-2	" " "	0896
		02	01	3.C.04		" " "	0896
		02	01	2.B.04		Scanner Presentation Observer	0897
		02	01	2.A.19	-1	" " "	0897
		02	01	2.A.19	-2	" " "	0897
		02	01	3.C.04		" " "	0897
		02	01	2.B.04		Scatterometer Presentation Observer	0948
		02	01	2.A.22	-1	Scatterometer Presentation Observer	0948
		02	01	3.C.04		Scatterometer Presentation Observer	0948
		13	01	2.B.04		Camera Mode Selector	0271
		13	01	2.A.17	-3	" " "	0271
		13	01	3.C.04		" " "	0271
		13	01	2.B.04		TV Mode Selector	0268
		13	01	2.A.04	-2	" " "	0268
		13	01	3.C.04		" " "	0268
		13	01	2.B.04		Scanner Mode Selector	0916
		13	01	2.A.19	-1	" " "	0916
		13	01	2.A.19	-2	" " "	0916
		13	01	3.C.04		" " "	0916
		13	01	2.B.04		Scatterometer Mode Selector	0949
		13	01	2.A.22	-1	" " "	0949
		13	01	3.C.04		" " "	0949

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
DISCIPLINE: Earth Observations FPE/SUBGROUP: ES-1 Earth Observations Facility							PAGE A-6.0-05-1
EXPERIMENT: 6.0 Ocean Resources							MISSION MODE: A
BASIC FUNCTION: 05 Experiment Shutdown							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Shutdown sensors	16	01	2.B.04		Camera Control Deactuator	0848
		16	01	2.A.17	-3	" " "	0848
		16	01	2.B.04		TV Camera Control Deactuator	0672
		16	01	2.A.04	-2	" " " "	0672
		16	01	2.B.04		Scanner Control Deactuator	0849
		16	01	2.A.19	-1	" " "	0849
		16	01	2.A.19	-2	" " "	0849
		16	01	2.B.04		Scatterometer Control Deactuator	0851
		16	01	2.A.22	-1	" " "	0851
10	Install lens covers	27	01	2.A.04	-2	TV Camera Cap Installer	0950
		27	01	4.D.01	-6	" " " "	0950
		27	01	2.A.17	-3	Camera Cap Installer	0951
		27	01	4.D.01	-7	" " "	0951
		27	01	2.A.19	-1	Scanner Cap Installer	0952
		27	01	2.A.19	-2	" " "	0952
		27	01	4.D.01		" " "	0952
11	Develop film	06	01	2.A.17	-3	Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		" "	0328
12	Package data for return to surface	17	01	2.A.27		Film Stower	0852

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
						PAGE A-6.0-06-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 6.0 Ocean Resources					MISSION MODE: A	
BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	Evaluate data for experimental usefulness	11	01	2.A.27	Film Evaluator	0329
		11	01	3.C.04	" "	0329
		13	01	2.A.27	Film Data Usefulness Determiner	0953
		13	01	3.C.04	" " " "	0953
		11	01	2.B.04	TV Data Evaluator	0958
		11	01	2.A.04	" " " "	0958
		11	01	3.C.04	" " " "	0958
		13	01	2.B.04	TV Data Usefulness Determiner	0954
		13	01	2.A.04	" " " "	0954
		13	01	3.C.04	" " " "	0954
		11	01	2.B.04	Scanner Data Evaluator	0957
		11	01	2.A.19	" " " "	0957
		11	01	2.A.19	" " " "	0957
		11	01	3.C.04	" " " "	0957
		13	01	2.B.04	Scanner Data Usefulness Determiner	0955
		13	01	2.A.19	" " " "	0955
		13	01	2.A.19	" " " "	0955
		13	01	3.C.04	" " " "	0955
		11	01	2.B.04	Scatterometer Data Evaluator	0959
		11	01	2.A.22	" " " "	0959
		11	01	3.C.04	" " " "	0959
		13	01	2.B.04	Scatterometer Data Usefulness Determiner	0956
		13	01	2.A.22	Scatterometer Data Usefulness Determiner	0956
		13	01	3.C.04	Scatterometer Data Usefulness Determiner	0956
7	Evaluate seeing conditions	11	01	2.B.04	Observation Condition Evaluator	0868

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1		
							PAGE A-6.0-06-2		
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 6.0 Ocean Resources				MISSION MODE: A					
				BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
7	(Continued)		11	01	2.A.04	-2	Observation Condition Evaluator		0868
			11	01	5.I.01		" " "	0868	
			11	01	3.C.04		" " "	0868	
8	Monitor sensor output electronic quality	01	01	2.B.04		TV Data Quality Monitor		0922	
		01	01	2.A.04	-2	" " " "	0922		
		01	01	2.B.04		Scanner Data Quality Monitor		0869	
		01	01	2.A.19	-1	" " " "	0869		
		01	01	2.A.19	-2	" " " "	0869		
		01	01	2.B.04		Scatterometer Data Quality Monitor		0871	
		01	01	2.A.22	-1	Scatterometer Data Quality Monitor		0871	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE A-6.0-09-1	
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 6.0 Ocean Resources						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Clean and service optics	19	01	2.A.04	-2	TV Camera Optics Cleaner	0096
		19	01	2.A.17	-3	Camera Optics Cleaner	0097
		19	01	2.A.19	-1	Scanner Optics Cleaner	0884
		19	01	2.A.19	-2	Scanner Optics Cleaner	0884
		19	01	2.A.22	-1	Scatterometer Optics Cleaner	0960
		19	01	4.D.06		Optical Equipment Cleaner	0093

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE A-6.0-10-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 6.0 Ocean Resources			MISSION MODE: A				
BASIC FUNCTION: 10 Unscheduled Maintenance							
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION						TITLE NO.
14	Perform	fault isolation	07	01	2.A.04	-2	TV Camera Fault Identifier 0689
			07	01	2.A.17	-3	Camera Fault Identifier 0886
			07	01	2.A.19	-1	Scanner Fault Identifier 0887
			07	01	2.A.19	-2	" " " 0887
			07	01	2.A.22	-1	Scatterometer Fault Identifier 0888
			07	01	2.B.04		Earth Surveys C/D Equipment Fault Identifier 0928
			07	01	4.C.02		Electronic Equipment Fault Identifier 0795
			07	01	4.C.07		Optical Equipment Fault Identifier 0891
15	Replace	failed modules, bulbs, and small parts	26	01	2.A.17	-3	Camera Module Remover 0158
			27	01	2.A.17	-3	Camera Module Installer 0160
			26	01	2.A.04	-2	TV Camera Module Remover 0111
			27	01	2.A.04	-2	TV Camera Module Installer 0112
			26	01	2.A.19	-1	Scanner Module Remover 0904
			26	01	2.A.19	-2	" " " 0904
			27	01	2.A.19	-1	Scanner Module Installer 0905
			27	01	2.A.19	-2	" " " 0905
			26	01	2.A.22	-1	Scatterometer Module Remover 0961
			27	01	2.A.22	-1	Scatterometer Module Installer 0962
			26	01	2.B.04		Earth Surveys C/D Equipment Module Remover 0926
			27	01	2.B.04		Earth Surveys C/D Equipment Module Installer 0927

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENTS:

2.0 Land Use Mapping

4.0 Resource Recognition and
Identification

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

2.0 Land Use Mapping

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE B-2.0-04-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 2.0 Land Use Mapping			MISSION MODE: B				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Unpackage instruments and sensors	18	01	2.A.01	-5	Telescope Unstower	0303
		18	01	2.A.03	-13	Spectrometer Unstower	0007
		18	01	2.A.17	-3	Camera Unstower	0292
		18	01	2.A.17	-4	" "	0292
		18	01	2.A.19	-1	Scanner Unstower	0823
		18	01	2.A.19	-2	" "	0823
		18	01	2.A.21	-2	Radiometer Unstower	0642
		18	01	2.A.22	-1	Scatterometer Unstower	0826
		18	01	2.A.23		Polarimeter Unstower	0824
		18	01	2.A.12	-16	Radar Transmitter Unstower	0611
		18	01	2.A.12	-17	Radar Receiver Unstower	0628
4	Obtain sensor baseline characteristics	03	01	2.A.01	-5	Telescope Inspector	0001
		03	01	2.A.03	-13	Spectrometer Inspector	0833
		03	01	2.A.17	-3	Camera Inspector	0294
		03	01	2.A.17	-4	" "	0294
		03	01	2.A.19	-1	Scanner Inspector	0828
		03	01	2.A.19	-2	" "	0828
		03	01	2.A.21	-2	Radiometer Inspector	0829
		03	01	2.A.22	-1	Scatterometer Inspector	0830
		03	01	2.A.23		Polarimeter Inspector	0831
		03	01	2.A.12	-16	Radar Transmitter Inspector	0932
		03	01	2.A.12	-17	Radar Receiver Inspector	0933
		08	01	2.A.03	-13	Spectrometer Calibrator	0072
		08	01	2.A.19	-1	Scanner Calibrator	0836
		08	01	2.A.19	-2	" "	0836
		08	01	2.A.21	-2	Radiometer Calibrator	0837
		08	01	2.A.22	-1	Scatterometer Calibrator	0838
		08	01	2.A.23		Polarimeter Calibrator	0839

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
DISCIPLINE: Earth Observations							PAGE B-2.0-04-2
FPE/SUBGROUP: ES-1 Earth Observations Facility							MISSION MODE: B
EXPERIMENT: 2.0 Land Use Mapping							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	09	01	2.A.01	-5	Telescope Aligner	0297
		09	01	2.A.12	-16	Radar Transmitter Aligner	0930
		09	01	2.A.12	-17	Radar Receiver Aligner	0931
		08	01	4.C.01		Spectrometer Calibrator	0072
		08	01	4.C.01		Scanner Calibrator	0836
		08	01	4.C.01		Radiometer Calibrator	0837
		08	01	4.C.01		Scatterometer Calibrator	0838
		08	01	4.C.01		Polarimeter Calibrator	0839
5	Activate data taking system	15	01	2.B.04		Camera Control Actuator	0245
		15	01	2.A.17	-3	" " "	0245
		15	01	2.A.17	-4	" " "	0245
		15	01	2.B.04		Scanner Control Actuator	0842
		15	01	2.A.19	-1	" " "	0842
		15	01	2.A.19	-2	" " "	0842
		15	01	2.B.04		Radiometer Control Actuator	0843
		15	01	2.A.21	-2	" " "	0843
		15	01	2.B.04		Radar Transmitter Control Actuator	0935
		15	01	2.A.12	-16	Radar Transmitter Control Actuator	0935
		15	01	2.B.04		Radar Receiver Control Actuator	0936
		15	01	2.A.12	-17	" " " "	0936
		15	01	2.B.04		Scatterometer Control Actuator	0850
		15	01	2.A.22	-1	" " "	0850
		15	01	2.B.04		Spectrometer Control Actuator	0036
		15	01	2.A.03	-13	" " "	0036
		15	01	2.B.04		Polarimeter Control Actuator	0844
		15	01	2.A.23		" " "	0844

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
DISCIPLINE: Earth Observations						PAGE B-2.0-04-3	
EXPERIMENT: 2.0 Land Use Mapping						MISSION MODE: B	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	2.B.04		Telescope Control Actuator	0846
		15	01	2.A.01	-5	" " "	0846
		15	01	4.B.01	-3	" " "	0846

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1		
							PAGE B-2.0-05-1		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility						
EXPERIMENT: 2.0 Land Use Mapping						MISSION MODE: B			
						BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE NO.			
7	Shutdown sensors	16	01	2.B.04		Camera Control Deactuator	0848		
		16	01	2.A.17	-3	" " "	0848		
		16	01	2.A.17	-4	" " "	0848		
		16	01	2.B.04		Scanner Control Deactuator	0849		
		16	01	2.A.19	-1	" " "	0849		
		16	01	2.A.19	-2	" " "	0849		
		16	01	2.B.04		Radar Transmitter Control Deactuator	0664		
		16	01	2.A.12	-16	Radar Transmitter Control Deactuator	0664		
		16	01	2.B.04		Radar Receiver Control Deactuator	0666		
		16	01	2.A.12	-17	" " " "	0666		
		16	01	2.B.04		Radiometer Control Deactuator	0673		
		16	01	2.A.21	-2	" " "	0673		
		16	01	2.B.04		Scatterometer Control Deactuator	0851		
		16	01	2.A.22	-1	" " "	0851		
		16	01	2.B.04		Spectrometer Control Deactuator	0409		
		16	01	2.A.03	-13	" " "	0409		
		16	01	2.B.04		Polarimeter Control Deactuator	0919		
		16	01	2.A.24		" " "	0919		
		8	Install lens covers	16	01	2.B.04		Telescope Control Deactuator	0320
				16	01	2.A.01	-5	" " "	0320
16	01			4.B.01	-3	" " "	0320		
27	01			2.A.01	-5	Telescope Cap Installer	0963		
27	01			4.D.01	-4	" " "	0963		
27	01			2.A.21	-2	Radiometer Cap Installer	0965		
27	01			4.D.01		" " "	0965		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1		
							PAGE B-2.0-05-2		
DISCIPLINE: Earth Observations				FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 2.0 Land Use Mapping				MISSION MODE: B					
				BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
8	(Continued)		27	01	2.A.22	-1	Scatterometer Cap Installer		0966
			27	01	4.D.01		" " "	0966	
			27	01	2.A.17	-3	Camera Cap Installer		0951
			27	01	2.A.17	-4	" " "	0951	
			27	01	4.D.01	-7	" " "	0951	
			27	01	2.A.19	-1	Scanner Cap Installer		0952
			27	01	2.A.10	-2	" " "	0952	
			27	01	4.D.01		" " "	0952	
			27	01	2.A.03	-13	Spectrometer Cap Installer		0964
			27	01	4.D.01		" " "	0964	
			27	01	2.A.23		Polarimeter Cap Installer		0967
			27	01	4.D.01		" " "	0967	
			9	Package data for return to surface		17	01	2.A.27	
17	01	2.A.17				-3	" "	0852	
17	01	2.A.17				-4	" "	0852	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
DISCIPLINE: Earth Observations						PAGE B-2.0-09-1	
EXPERIMENT: 2.0 Land Use Mapping						MISSION MODE: B	
FPE/SUBGROUP: ES-1 Earth Observations Facility						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Clean and service optics	19	01	2.A.01	-5	Telescope Optics Cleaner	0004
		19	01	2.A.03	-13	Spectrometer Optics Cleaner	0095
		19	01	2.A.17	-3	Camera Optics Cleaner	0097
		19	01	2.A.17	-4	" " "	0097
		19	01	2.A.19	-1	Scanner Optics Cleaner	0884
		19	01	2.A.19	-2	" " "	0884
		19	01	4.D.06		Optical Equipment Cleaner	0093

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	ES-1
							PAGE	B-2.0-10-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 2.0 Land Use Mapping							MISSION MODE: B	
							BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION						TITLE	NO.
11	Perform	fault isolation	07	01	2.A.01	-5	Telescope Fault Identifier	0885
			07	01	2.A.03	-13	Spectrometer Fault Identifier	0038
			07	01	2.A.17	-3	Camera Fault Identifier	0886
			07	01	2.A.17	-4	" " "	0886
			07	01	2.A.19	-1	Scanner Fault Identifier	0887
			07	01	2.A.19	-2	" " "	0887
			07	01	2.A.21	-2	Radiometer Fault Identifier	0691
			07	01	2.A.22	-1	Scatterometer Fault Identifier	0888
			07	01	2.A.23		Polarimeter Fault Identifier	0889
			07	01	2.A.12	-16	Radar Transmitter Fault Identifier	0683
			07	01	2.A.12	-17	Radar Receiver Fault Identifier	0523
			07	01	4.B.01	-3	Computer Fault Identifier	0523
			07	01	2.B.04		Earth Survey C/D Equipment Fault Identifier	0928
			07	01	4.C.02		Electronic Equipment Fault Identifier	0795
			07	01	4.C.07		Optical Equipment Fault Identifier	0891
			07	01	4.C.04		Radar Transmitter Fault Identifier	0683
			07	01	4.C.04		Radar Receiver Fault Identifier	0685
12	Replace	failed modules and small parts	26	01	2.A.17	-3	Camera Module Remover	0158
			26	01	2.A.17	-4	" " "	0158
			26	01	2.A.19	-1	Scanner Module Remover	0904
			26	01	2.A.19	-2	" " "	0904
			26	01	2.A.12	-16	Radar Transmitter Module Remover	0615
			26	01	2.A.12	-17	Radar Receiver Module Remover	0624
			26	01	2.A.21	-2	Radiometer Module Remover	0638
			26	01	2.A.22	-1	Scatterometer Module Remover	0961

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE B-2.0-10-2	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 2.0 Land Use Mapping			MISSION MODE: B				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	(Continued)	26	01	2.A.03	-13	Spectrometer Module Remover	0109
		26	01	2.A.23		Polarimeter Module Remover	0908
		26	01	2.A.01	-5	Telescope Module Remover	0187
		26	01	4.B.01	-3	Computer Module Remover	0519
		26	01	2.B.04		Earth Survey C/D Equipment Module Remover	0926
		27	01	2.A.17	-3	Camera Module Installer	0160
		27	01	2.A.17	-4	" " "	0160
		27	01	2.A.10	-1	Scanner Module Installer	0905
		27	01	2.A.10	-2	" " "	0905
		27	01	2.A.12	-16	Radar Transmitter Module Installer	0616
		27	01	2.A.12	-17	Radar Receiver Module Installer	0623
		27	01	2.A.21	-2	Radiometer Module Installer	0637
		27	01	2.A.22	-1	Scatterometer Module Installer	0962
		27	01	2.A.03	-13	Spectrometer Module Installer	0110
		27	01	2.A.23		Polarimeter Module Installer	0909
		27	01	2.A.01	-5	Telescope Module Installer	0188
		27	01	4.B.01	-3	Computer Module Installer	0520
		27	01	2.B.04		Earth Survey C/D Equipment Module Installer	0927

DISCIPLINE: Earth Observations

FUNCTIONAL PROGRAM ELEMENT (FPE):

ES-1 Earth Observations Facility

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

4.0 Resource Recognition and Identification

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES ES-1
							PAGE B-4.0-04-1
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT: 4.0 Resource Recognition and Identification			MISSION MODE: B				
							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION	TITLE				NO.	
3	Unpackage instruments and sensors	18	01	2.A.01	-5	Telescope Unstower	0303
		18	01	2.A.03	-13	Spectrometer Unstower	0007
		18	01	2.A.17	-3	Camera Unstower	0292
		18	01	2.A.17	-4	" "	0292
		18	01	2.A.19	-1	Scanner Unstower	0823
		18	01	2.A.19	-2	" "	0823
		18	01	2.A.21	-2	Radiometer Unstower	0624
		18	01	2.A.23		Polarimeter Unstower	0824
		18	01	2.A.03	-15	Spectrometer Unstower	0007
		18	01	2.A.12	-16	Radar Transmitter Unstower	0611
		18	01	2.A.12	-17	Radar Receiver Unstower	0628
4	Obtain sensor baseline characteristics	03	01	2.A.01	-5	Telescope Inspector	0001
		03	01	2.A.03	-13	Spectrometer Inspector	0833
		03	01	2.A.17	-3	Camera Inspector	0294
		03	01	2.A.17	-4	" "	0294
		03	01	2.A.19	-1	Scanner Inspector	0828
		03	01	2.A.10	-2	" "	0828
		03	01	2.A.21	-2	Radiometer Inspector	0829
		03	01	2.A.23		Polarimeter Inspector	0831
		03	01	2.A.03	-15	Spectrometer Inspector	0833
		03	01	2.A.12	-16	Radar Transmitter Inspector	0932
		03	01	2.A.12	-17	Radar Receiver Inspector	0933
		08	01	2.A.03	-13	Spectrometer Calibrator	0072
		08	01	2.A.19	-1	Scanner Calibrator	0836
		08	01	2.A.19	-2	" "	0836
		08	01	2.A.21	-2	Radiometer Calibrator	0837
		08	01	2.A.23		Polarimeter Calibrator	0839

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
						PAGE B-4.0-04-2
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility			
EXPERIMENT: 4.0 Resource Recognition and Identification					MISSION MODE: B	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4	(Continued)	08	01	2.A.03	-15	Spectrometer Calibrator 0072
		08	01	4.C.01		" " 0072
		08	01	4.C.01		Scanner Calibrator 0836
		08	01	4.C.01		Radiometer Calibrator 0837
		08	01	4.C.01		Polarimeter Calibrator 0839
		09	01	2.A.01	-5	Telescope Aligner 0297
		09	01	2.A.12	-16	Radar Transmitter Aligner 0930
		09	01	2.A.12	-17	Radar Receiver Aligner 0931
5	Activate data taking system	15	01	2.B.04		Camera Control Actuator 0245
		15	01	2.A.17	-3	" " " 0245
		15	01	2.A.17	-4	" " " 0245
		15	01	2.B.04		Scanner Control Actuator 0842
		15	01	2.A.19	-1	" " " 0842
		15	01	2.A.19	-2	" " " 0842
		15	01	2.B.04		Radiometer Control Actuator 0843
		15	01	2.A.21	-2	" " " 0843
		15	01	2.B.04		Radar Transmitter Control Actuator 0935
		15	01	2.A.12	-16	" " " " 0935
		15	01	2.B.04		Radar Receiver Control Actuator 0936
		15	01	2.A.12	-17	" " " " 0936
		15	01	2.B.04		Spectrometer Control Actuator 0036
		15	01	2.A.03	-13	" " " " 0036
		15	01	2.A.03	-15	" " " " 0036
		15	01	2.B.04		Polarimeter Control Actuator 0844
		15	01	2.A.23		" " " " 0844
		15	01	2.B.04		Telescope Control Actuator 0846
		15	01	2.A.01	-5	" " " " 0846
		15	01	4.B.01	-3	" " " " 0846

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE B-4.0-05-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT:						MISSION MODE: B	
4.0 Resource Recognition and Identification			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION	TITLE				NO.	
7	Shutdown sensors	16	01	2.B.04		Camera Control Deactuator	0848
		16	01	2.A.17	-3	" " "	0848
		16	01	2.A.17	-4	" " "	0848
		16	01	2.B.04		Scanner Control Deactuator	0849
		16	01	2.A.19	-1	" " "	0849
		16	01	2.A.19	-2	" " "	0849
		16	01	2.B.04		Radiometer Control Deactuator	0673
		16	01	2.A.21	-2	" " "	0673
		16	01	2.B.04		Radar Transmitter Control	0664
						Deactuator	
		16	01	2.A.12	-16	Radar Transmitter Control	0664
						Deactuator	
		16	01	2.B.04		Radar Receiver Control Deactuator	0666
		16	01	2.A.12	-17	" " " "	0666
		16	01	2.B.04		Spectrometer Control Deactuator	0409
		16	01	2.A.03	-13	" " "	0409
		16	01	2.A.03	-15	" " "	0409
		16	01	2.B.04		Polarimeter Control Deactuator	0919
		16	01	2.A.23		" " "	0919
		16	01	2.B.04		Telescope Control Deactuator	0320
		16	01	2.A.01	-5	" " "	0320
		16	01	4.B.01	-3	" " "	0320
8	Install lens covers	27	01	2.A.17	-3	Camera Cap Installer	0951
		27	01	2.A.17	-4	" " "	0951
		27	01	4.D.01	-6	" " "	0951
		27	01	2.A.01	-5	Telescope Cap Installer	0963
		27	01	4.D.01	-4	" " "	0963
		27	01	2.A.03	-13	Spectrometer Cap Installer	0964

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1
DISCIPLINE: Earth Observations						PAGE B-4.0-05-2
EXPERIMENT: 4.0 Resource Recognition and Identification						MISSION MODE: B
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
8	(Continued)	27	01	2.A.03	-15	Spectrometer Cap Installer 0964
		27	01	4.D.01		" " " 0964
		27	01	2.A.19	-1	Scanner Cap Installer 0952
		27	01	2.A.19	-2	" " " 0952
		27	01	4.D.01		" " " 0952
		27	01	2.A.21	-2	Radiometer Cap Installer 0965
		27	01	4.D.01		" " " 0965
		27	01	2.A.23		Polarimeter Cap Installer 0967
		27	01	4.D.01		" " " 0967
9	Package data for return to surface	17	01	2.A.27		Film Stower 0852
		17	01	2.A.17	-3	" " 0852
		17	01	2.A.17	-4	" " 0852
		17	01	4.D.05	-2	Tape Stower 0203
		17	01	2.A.19	-1	" " 0203
		17	01	2.A.21	-2	" " 0203
		17	01	2.A.23		" " 0203
		17	01	2.A.19	-2	" " 0203
		17	01	2.A.03	-13	" " 0203
		17	01	2.A.03	-15	" " 0203

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1	
						PAGE B-4.0-09-1	
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility				
EXPERIMENT:						MISSION MODE: B	
4.0 Resource Recognition and Identification			BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
10	Clean and service optics	19	01	2.A.01	-5	Telescope Optics Cleaner	0004
		19	01	2.A.17	-3	Camera Optics Cleaner	0097
		19	01	2.A.17	-4	" " "	0097
		19	01	2.A.03	-13	Spectrometer Optics Cleaner	0095
		19	01	2.A.19	-1	Scanner Optics Cleaner	0884
		19	01	2.A.19	-2	" " "	0884
		19	01	4.D.06		Optical Equipment Cleaner	0093

FLIGHT EXPERIMENT TASK-SKILLS						SERIES ES-1		
						PAGE B-4.0-10-1		
DISCIPLINE: Earth Observations			FPE/SUBGROUP: ES-1 Earth Observations Facility					
EXPERIMENT: 4.0 Resource Recognition and Identification							MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
11	Perform fault isolation	07	01	2.A.01	-5	Telescope Fault Identifier	0885	
		07	01	2.A.03	-13	Spectrometer Fault Identifier	0038	
		07	01	2.A.17	-3	Camera Fault Identifier	0886	
		07	01	2.A.17	-4	" " "	0886	
		07	01	2.A.19	-1	Scanner Fault Identifier	0887	
		07	01	2.A.19	-2	" " "	0887	
		07	01	2.A.21	-2	Radiometer Fault Identifier	0691	
		07	01	2.A.23		Polarimeter Fault Identifier	0889	
		07	01	2.A.03	-15	Spectrometer Fault Identifier	0038	
		07	01	2.A.12	-16	Radar Transmitter Fault Identifier	0683	
		07	01	4.C.04		Radar Transmitter Fault Identifier	0683	
		07	01	2.A.12	-17	Radar Receiver Fault Identifier	0685	
		07	01	4.C.04		" " " "	0685	
		07	01	4.B.01	-3	Computer Fault Identifier	0523	
		07	01	2.B.04		Earth Survey C/D Equipment Fault Identifier	0928	
		07	01	4.C.02		Electronic Equipment Fault Identifier	0795	
		07	01	4.C.07		Optical Equipment Fault Identifier	0891	
12	Replace failed modules, bulbs and small parts	26	01	2.A.01	-5	Telescope Module Remover	0187	
		26	01	2.A.03	-13	Spectrometer Module Remover	0109	
		26	01	2.A.03	-15	" " "	0109	
		26	01	2.A.17	-3	Camera Module Remover	0158	
		26	01	2.A.17	-4	" " "	0158	
		26	01	2.A.19	-1	Scanner Module Remover	0904	

FLIGHT EXPERIMENT TASK-SKILLS

SERIES ES-1

PAGE B-4.0-10-2

DISCIPLINE: Earth Observations

FPE/SUBGROUP: ES-1 Earth Observations Facility

EXPERIMENT:

MISSION MODE: B

4.0 Resource Recognition and Identification

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	(Continued)	26	01	2.A.19	-2	Scanner Module Remover	0904
		26	01	2.A.21	-2	Radiometer Module Remover	0638
		26	01	2.A.23		Polarimeter Module Remover	0908
		26	01	2.A.12	-16	Radar Transmitter Module Remover	0615
		26	01	2.A.12	-17	Radar Receiver Module Remover	0624
		26	01	2.B.04		Earth Survey C/D Equipment Module Remover	0926
		26	01	4.B.01	-3	Computer Module Remover	0519
		27	01	2.A.01	-5	Telescope Module Installer	0188
		27	01	2.A.03	-13	Spectrometer Module Installer	0110
		27	01	2.A.03	-15	" " "	0110
		27	01	2.A.17	-3	Camera Module Installer	0160
		27	01	2.A.17	-4	" " "	0160
		27	01	2.A.19	-1	Scanner Module Installer	0905
		27	01	2.A.19	-2	" " "	0905
		27	01	2.A.21	-2	Radiometer Module Installer	0637
		27	01	2.A.23		Polarimeter Module Installer	0909
		27	01	2.A.12	-16	Radar Transmitter Module Installer	0616
		27	01	2.A.12	-17	Radar Receiver Module Installer	0623
		27	01	2.B.04		Earth Survey C/D Equipment Module Installer	0927
		27	01	4.B.01	-3	Computer Module Installer	0520

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

1.0 Neurological Function

1.1 Human Vestibular Function

2.0 Cardiovascular Function

2.1 Use of LBNP Device to Prevent CV
Deconditioning

3.0 Renal Function

3.1 Renal Blood Flow

7.0 Hematologic Function

7.1 Blood Volume and Red Cell Life Span

10.0 Clinical Therapeutic Function

10.1 Exercise Conditioning

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Neurological Function

1.1 Human Vestibular Function

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-1.1-04-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:							MISSION MODE: A
1.1 Neurological Function; Human Vestibular Function					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Set up equipment	18	01	2.C.02	-1	Rotational Testing Device Unstower	1654
		18	01	2.C.02	-2	" " " "	1654
		18	01	2.C.02	-3	" " " "	1654
		18	01	2.C.02	-4	" " " "	1654
		22	01	2.C.02	-1	Rotational Testing Device Translocator	1655
		22	01	2.C.02	-2	Rotational Testing Device Translocator	1655
		22	01	2.C.02	-3	Rotational Testing Device Translocator	1655
		22	01	2.C.02	-4	Rotational Testing Device Translocator	1655
		20	01	2.C.02	-1	Rotational Testing Device Assembler	1656
		27	01	2.C.02	-1	Rotational Testing Device Installer	1657
		27	01	2.C.02	-2	Rotational Testing Device Installer	1657
		27	01	2.C.02	-3	Rotational Testing Device Installer	1657
		27	01	2.C.02	-4	Rotational Testing Device Installer	1657
		27	01	2.C.28		Rotational Testing Device Installer	1657
		18	01	2.B.05	-3	Life Sciences C/D Equipment Unstower	1701
		26	01	4.D.01		Protective Cover Remover	1671
		22	01	4.D.01		Protective Cover Translocator	1672
		17	01	4.D.01		Protective Cover Stower	1673
		18	01	2.E.11		Biteboard Unstower	1676

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-1.1-04-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	(Continued)	22	01	2.E.11		Biteboard Translocator 1677
		27	01	2.E.11		Biteboard Installer 1678
		27	01	2.C.28		" " 1678
		18	01	2.F.02	-1	Record Keeping Materials Unstower 1709
		18	01	2.F.02	-2	" " " " 1709
		22	01	2.F.02	-1	Record Keeping Materials 1710
						Translocator
		22	01	2.F.02	-2	Record Keeping Materials 1710
						Translocator
		18	01	2.E.01		Cable Unstower 1682
		22	01	2.E.01		Cable Translocator 1683
		27	01	2.E.01		Cable Installer 1684
		27	01	2.C.02	-1	" " 1684
		27	01	2.B.05	-3	" " 1684
		27	01	2.A.53		" " 1684
		27	01	2.A.54		" " 1684
		18	01	2.A.53		Accelerometer Unstower 1686
		22	01	2.A.53		Accelerometer Translocator 1687
		27	01	2.A.53		Accelerometer Installer 1688
		18	01	2.A.54		Head Proximity Device Unstower 1712
		22	01	2.A.54		Head Proximity Device Translocator 1713
		27	01	2.A.54		Head Proximity Device Installer 1714
2	Document equipment setup	02	01	2.C.02	-1	Vestibular Research Configuration 1725
						Observer
		02	01	2.C.02	-2	Vestibular Research Configuration 1725
						Observer
		02	01	2.C.02	-3	Vestibular Research Configuration 1725
						Observer

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-04-3	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function				MISSION MODE: A			
				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	02	01	2.C.02	-4	Vestibular Research Configuration Observer	1725
		02	01	2.B.05	-3	Vestibular Research Configuration Observer	1725
		02	01	2.E.11		Vestibular Research Configuration Observer	1725
		02	01	2.E.01		Vestibular Research Configuration Observer	1725
		02	01	2.A.53		Vestibular Research Configuration Observer	1725
		02	01	2.A.54		Vestibular Research Configuration Observer	1725
		02	01	2.C.28		Vestibular Research Configuration Observer	1725
		05	01	2.C.02	-1	Vestibular Research Configuration Recorder	1726
		05	01	2.C.02	-2	Vestibular Research Configuration Recorder	1726
		05	01	2.C.02	-3	Vestibular Research Configuration Recorder	1726
		05	01	2.C.02	-4	Vestibular Research Configuration Recorder	1726
		05	01	2.B.05	-3	Vestibular Research Configuration Recorder	1726
		05	01	2.E.11		Vestibular Research Configuration Recorder	1726
		05	01	2.E.01		Vestibular Research Configuration Recorder	1726
		05	01	2.A.53		Vestibular Research Configuration Recorder	1726

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-1.1-04-4
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	05	01	2.A.54		Vestibular Research Configuration Recorder	1726
		05	01	2.C.28		Vestibular Research Configuration Recorder	1726
		05	01	2.F.02		Vestibular Research Configuration Recorder	1726
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05	-3	" " " " "	1702
		14	01	2.C.02	-1	Rotational Testing Device Tester	1658
		14	01	2.C.02	-2	" " " "	1658
		14	01	2.C.02	-3	" " " "	1658
		14	01	2.C.02	-4	" " " "	1658
		01	01	2.B.05	-3	" " " "	1658
		01	01	2.C.02	-1	" " " "	1658
		01	01	2.C.02	-2	" " " "	1658
		01	01	2.C.02	-3	" " " "	1658
		01	01	2.C.02	-4	" " " "	1658
		14	01	2.A.53		Accelerometer Tester	1689
		01	01	2.A.53		" "	1689
		14	01	2.A.54		Head Proximity Device Tester	1715
		01	01	2.A.54		" " " "	1715
38	Check out support equipment operation	14	01	4.D.05		Data Recorder Tester	1696
		14	01	4.D.10		" " "	1696
		01	01	4.D.05		" " "	1696
		01	01	4.D.10		" " "	1696

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
DISCIPLINE: Life Sciences FPE/SUBGROUP: LS-1 Medical Research Facility							PAGE A-1.1-04-5
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function							MISSION MODE: A
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
40	Check out IMS programming/monitoring function	14	01	4.B.09		Data Management Unit Tester	1733
		01	01	4.B.09		" " " "	1733
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer	1740
		02	01	3.D.		" " " "	1740
		01	01	2.B.05	-3	Human Subject Status Monitor	1741
		01	01	2.C.28		" " " "	1741
62	Reconfigure equipment	26	01	2.C.02	-1	Rotational Testing Device Remover	1659
		26	01	2.C.02	-2	" " " "	1659
		26	01	2.C.02	-3	" " " "	1659
		26	01	2.C.02	-4	" " " "	1659
		27	01	2.C.02	-1	Rotational Testing Device Installer	1657
		27	01	2.C.02	-2	Rotational Testing Device Installer	1657
		27	01	2.C.02	-3	Rotational Testing Device Installer	1657
		27	01	2.C.02	-4	Rotational Testing Device Installer	1657
		26	01	2.C.02	-1	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-2	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-3	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-4	Rotational Testing Device Module Remover	1660

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-1.1-04-6
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function					MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
62	(Continued)	27	01	2.C.02	-1	Rotational Testing Device Module Installer 1661
		27	01	2.C.02	-2	Rotational Testing Device Module Installer 1661
		27	01	2.C.02	-3	Rotational Testing Device Module Installer 1661
		27	01	2.C.02	-4	Rotational Testing Device Module Installer 1661
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover 1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer 1704
		26	01	2.E.11		Biteboard Remover 1679
		27	01	2.E.11		Biteboard Installer 1678
		26	01	2.A.53		Accelerometer Remover 1690
		27	01	2.A.53		Accelerometer Installer 1688
		26	01	2.A.54		Head Proximity Device Remover 1716
		27	01	2.A.54		Head Proximity Device Installer 1714
		26	01	2.A.54		Head Proximity Device Module Remover 1717
		27	01	2.A.54		Head Proximity Device Module Installer 1718

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-1.1-05-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function					MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
12	Clean up after test run	19	01	1.A.01	-18	RAM Surfaces Cleaner 1742
		19	01	4.D.06		" " " 1742
		19	01	1.A.03	-10	RAM Facility Equipment Cleaner 1743
		19	01	4.D.06		" " " " 1743
		19	01	2.C.02	-1	Rotational Testing Device Cleaner 1662
		19	01	2.C.02	-2	" " " " 1662
		19	01	2.C.02	-3	" " " " 1662
		19	01	2.C.02	-4	" " " " 1662
		19	01	4.D.06		" " " " 1662
		19	01	2.E.11		Biteboard Cleaner 1680
		19	01	4.D.06		" " " " 1680
		19	01	2.B.05	-3	Life Sciences C/D Equipment Cleaner 1705
		19	01	4.D.06		Life Sciences C/D Equipment Cleaner 1705
		19	01	2.A.53		Accelerometer Cleaner 1691
		19	01	4.D.06		" " " " 1691
		19	01	2.A.54		Head Proximity Device Cleaner 1719
		19	01	4.D.06		" " " " 1719
		18	01	4.D.06		Cleaning/Decontamination Equipment Unstower 1537
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator 1538
		17	01	4.D.06		Cleaning/Decontamination Equipment Stower 1539
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer 1740
		02	01	3.D.		" " " " 1740

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1		
						PAGE A-1.1-05-2		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT:						MISSION MODE: A		
1.1 Neurological Function; Human Vestibular Function						BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
57	Remove subject instrumentation	26	01	2.C.02	-2	Rotational Testing Device Remover	1659	
		26	01	2.C.02	-3	" " " "	1659	
		26	01	2.C.02	-4	" " " "	1659	
		26	01	2.C.28		" " " "	1659	
		26	01	2.E.11		Biteboard Remover	1679	
		26	01	2.C.28		" "	1679	
		26	01	2.A.54		Head Proximity Device Remover	1716	
		26	01	2.C.28		" " " "	1716	
		26	01	2.A.53		Accelerometer Remover	1690	
		26	01	2.C.28		" "	1690	
59	Stow equipment	22	01	2.C.02	-1	Rotational Testing Device	1655	
						Translocator		
		22	01	2.C.02	-2	Rotational Testing Device	1655	
						Translocator		
		22	01	2.C.02	-3	Rotational Testing Device	1655	
						Translocator		
		22	01	2.C.02	-4	Rotational Testing Device	1655	
						Translocator		
		17	01	2.C.02	-1	Rotational Testing Device Stower	1663	
		17	01	2.C.02	-2	" " " "	1663	
		17	01	2.C.02	-3	" " " "	1663	
		17	01	2.C.02	-4	" " " "	1663	
		17	01	2.B.05	-3	Life Sciences C/D Equipment	1706	
						Stower		
		18	01	4.D.01		Protective Cover Unstower	1674	
		22	01	4.D.01		Protective Cover Translocator	1672	
		27	01	4.D.01		Protective Cover Installer	1675	
		22	01	2.E.11		Biteboard Translocator	1677	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-1.1-05-3
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
59	(Continued)	17	01	2.E.11		Biteboard Stower	1681
		22	01	2.F.02	-1	Record Keeping Materials Translocator	1710
		22	01	2.F.02	-2	Record Keeping Materials Translocator	1710
		17	01	2.F.02	-1	Record Keeping Materials Stower	1711
		17	01	2.F.02	-2	" " " "	1711
		26	01	2.E.01		Cable Remover	1685
		26	01	2.C.02	-1	" "	1685
		26	01	2.B.05	-3	" "	1685
		26	01	2.A.53		" "	1685
		26	01	2.A.54		" "	1685
		22	01	2.E.01		Cable Translocator	1683
		17	01	2.E.01		Cable Stower	0152
		22	01	2.A.53		Accelerometer Translocator	1687
		17	01	2.A.53		Accelerometer Stower	1692
		22	01	2.A.54		Head Proximity Device Translocator	1713
		17	01	2.A.54		Head Proximity Device Stower	1720
60	Complete operational log	06	01	4.D.08		Vestibular Research Data Recorder	1727
		06	01	3.D.02		" " " "	1727
		06	01	3.D.05		" " " "	1727
64	Secure data for return	22	01	4.D.08		Record Keeping Materials Translocator	1710
		22	01	4.D.05		Record Keeping Materials Translocator	1710
		22	01	4.D.10		Record Keeping Materials Translocator	1710

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-05-4	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT:				MISSION MODE: A			
1.1 Neurological Function; Human Vestibular Function				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
64	(Continued)	22	01	2.F.02	-1	Record Keeping Materials Translocator	1710
		22	01	2.F.02	-2	Record Keeping Materials Translocator	1710
		17	01	4.D.08		Record Keeping Materials Stower	1711
		17	01	4.D.05		" " " "	1711
		17	01	4.D.10		" " " "	1711
		17	01	2.F.02	-1	" " " "	1711
		17	01	2.F.02	-2	" " " "	1711

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-1	
							PAGE	A-1.1-06-1	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function							MISSION MODE: A		
							BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT			CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.		DESCRIPTION				TITLE		NO.	
3		Activate rotating litter chair	15	01	2.B.05	-3	Rotational Testing Device Control Actuator		1664
			15	01	2.C.02	-1	Rotational Testing Device Control Actuator		1664
4		Rotate in rotating litter chair	31(30)	06	2.C.28	-1	Rotational Testing Device Occupant		1665
			31(30)	06	2.C.02		" " " "		1665
			31(30)	06	5.A.04		" " " "		1665
5		Report visual target apparent movement	02(30)	06	2.C.28	-1	Visual Target Observer		1744
			02(30)	06	2.C.02		" " "		1744
			02(30)	06	5.A.04		" " "		1744
			02(30)	06	2.E.12		" " "		1744
			11(30)	06	2.C.28	-1	Visual Target Evaluator		1745
			11(30)	06	2.C.02		" " "		1745
			11(30)	06	5.A.04		" " "		1745
			11(30)	06	2.E.12		" " "		1745
			05(30)	06	2.C.28	-1	Visual Target Status Communicator		1746
			05(30)	06	2.C.02		" " " "		1746
			05(30)	06	5.A.04		" " " "		1746
			05(30)	06	2.E.12		" " " "		1746
6		Determine canal stimulation threshold	11	01	2.C.28	-1	Vestibular Research Evaluator		1728
			11	01	5.A.04		" " "		1728
			11	01	2.C.02		" " "		1728
			11	01	3.D.02		" " "		1728
			11	01	3.D.05		" " "		1728

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-1.1-06-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
7	Report clinical symptoms of canal stimulation	11(30)	06	2.C.28		Canal Stimulation Symptoms Evaluator 1747
		11(30)	06	2.C.02	-1	Canal Stimulation Symptoms Evaluator 1747
		11(30)	06	5.A.04		Canal Stimulation Symptoms Evaluator 1747
		11(30)	06	3.D.02	-2	Canal Stimulation Symptoms Evaluator 1747
		05(30)	06	2.C.28		Canal Stimulation Symptoms Communicator 1748
		05(30)	06	2.C.02	-1	Canal Stimulation Symptoms Communicator 1748
		05(30)	06	5.A.04		Canal Stimulation Symptoms Communicator 1748
		05(30)	06	3.D.02	-2	Canal Stimulation Symptoms Communicator 1748
		11	01	2.C.28		Vestibular Research Evaluator 1728
		11	01	2.C.02	-1	" " " 1728
		11	01	5.A.04		" " " 1728
		11	01	3.D.02	-2	" " " 1728
		11	01	3.D.05		" " " 1728
8	Determine rotational-G susceptibility	13	01	2.C.28		Vestibular Research Results Determiner 1729
		13	01	2.C.02	-1	Vestibular Research Results Determiner 1729
		13	01	5.A.04		Vestibular Research Results Determiner 1729
		13	01	3.D.02	-2	Vestibular Research Results Determiner 1729

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1	
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DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
8	(Continued)		13	01	3.D.05	Vestibular Research Results Determiner 1729		
9	Establish chair/litter tilt angles		13	01	2.C.28	Vestibular Research Planner 1730		
			13	01	2.C.02	-1	" " "	1730
			13	01	5.A.04		" " "	1730
			13	01	3.D.05		" " "	1730
			13	01	3.D.02	-1	" " "	1730
			13	01	3.D.02	-2	" " "	1730
			15	01	2.C.02	-1	Rotational Testing Device Control Actuator	1664
			15	01	2.B.05	-3	Rotational Testing Device Control Actuator	1664
10	Adjust settings on OTG, Rod and Sphere		11(30)	06	2.C.02	-2	Spatial Localization Success Evaluator 1749	
			11(30)	06	2.C.02	-3	Spatial Localization Success Evaluator 1749	
			11(30)	06	2.C.02	-4	Spatial Localization Success Evaluator 1749	
			11(30)	06	5.A.04		Spatial Localization Success Evaluator 1749	
			11(30)	06	2.C.02	-1	Spatial Localization Success Evaluator 1749	
			10(30)	06	2.C.02	-2	Rotational Testing Device Controller 1666	
			10(30)	06	2.C.02	-3	Rotational Testing Device Controller 1666	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
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DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	(Continued)	10(30)	06	2.C.02	-4	Rotational Testing Device Controller	1666
		10(30)	06	5.A.04		Rotational Testing Device Controller	1666
		10(30)	06	2.C.02	-1	Rotational Testing Device Controller	1666
11	Report spatial localization test results	02	01	2.C.28		Vestibular Research Observer	1731
		02	01	2.C.02	-2	" " "	1731
		02	01	2.C.02	-3	" " "	1731
		02	01	2.C.02	-4	" " "	1731
		02	01	5.A.04		" " "	1731
		02	01	3.D.02	-3	" " "	1731
		05	01	2.C.02	-2	Vestibular Research Results Communicator	1732
		05	01	2.C.02	-3	Vestibular Research Results Communicator	1732
		05	01	2.C.02	-4	Vestibular Research Results Communicator	1732
		05	01	2.C.28		Vestibular Research Results Communicator	1732
14	Operate voice and data recorders	15	01	4.D.05		Data Recorder Control Actuator	1399
		15	01	4.D.10		" " " "	1399
55	Review results with ground personnel	05	01	4.A.02		Radio Communicator	0206
		05	01	3.D.02	-1	" "	0206

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1	
							PAGE A-1.1-06-5	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
55	(Continued)	05	01	3.D.02	-2	Radio Communicator	0206	
		05	01	3.D.02	-3	" "	0206	
56	Plan follow-on experiments	13	01	2.C.28		Vestibular Research Planner	1730	
		13	01	3.D.02	-1	" " "	1730	
		13	01	3.D.02	-2	" " "	1730	
		13	01	3.D.02	-3	" " "	1730	
		13	01	2.C.02	-1	" " "	1730	
		13	01	2.C.02	-2	" " "	1730	
		13	01	2.C.02	-3	" " "	1730	
		13	01	2.C.02	-4	" " "	1730	
		13	01	3.D.05		" " "	1730	
		13	01	2.B.05	-3	" " "	1730	
		13	01	2.E.11		" " "	1730	
		13	01	2.F.02	-1	" " "	1730	
		13	01	2.F.02	-2	" " "	1730	
		13	01	2.A.53		" " "	1730	
		13	01	2.A.54		" " "	1730	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-1.1-09-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	08	01	2.C.02	-1	Rotational Testing Device Calibrator	1667
		08	01	2.C.02	-2	Rotational Testing Device Calibrator	1667
		08	01	2.C.02	-3	Rotational Testing Device Calibrator	1667
		08	01	2.C.02	-4	Rotational Testing Device Calibrator	1667
		08	01	4.C.01		Rotational Testing Device Calibrator	1667
		21	01	2.C.02	-1	Rotational Testing Device Disassembler	1668
		21	01	2.C.02	-2	Rotational Testing Device Disassembler	1668
		21	01	2.C.02	-3	Rotational Testing Device Disassembler	1668
		21	01	2.C.02	-4	Rotational Testing Device Disassembler	1668
		20	01	2.C.02	-1	Rotational Testing Device Assembler	1656
		20	01	2.C.02	-2	Rotational Testing Device Assembler	1656
		20	01	2.C.02	-3	Rotational Testing Device Assembler	1656
		20	01	2.C.02	-4	Rotational Testing Device Assembler	1656
		26	01	2.C.02	-1	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-2	Rotational Testing Device Module Remover	1660

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-09-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:			MISSION MODE: A				
1.1 Neurological Function; Human Vestibular Function			BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	26	01	2.C.02	-3	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-4	Rotational Testing Device Module Remover	1660
		27	01	2.C.02	-1	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-2	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-3	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-4	Rotational Testing Device Module Installer	1661
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		26	01	2.A.54		Head Proximity Device Module Remover	1717
		27	01	2.A.54		Head Proximity Device Module Installer	1718
		21	01	2.A.54		Head Proximity Device Disassembler	1721
		20	01	2.A.54		Head Proximity Device Assembler	1722
		21	01	4.D.05		Data Recorder Disassembler	1697
		21	01	4.D.10		" " "	1697
		20	01	4.D.05		Data Recorder Assembler	1698
		20	01	4.D.10		" " "	1698
		26	01	4.D.05		Data Recorder Module Remover	1699
		26	01	4.D.10		" " " "	1699
		27	01	4.D.05		Data Recorder Module Installer	1700
		27	01	4.D.10		" " " "	1700

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-09-3	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
36	(Continued)	21	01	4.B.09	Data Management Unit Disassembler	1734	
		20	01	4.B.09	Data Management Unit Assembler	1735	
		26	01	4.B.09	Data Management Unit Module Remover	1736	
		27	01	4.B.09	Data Management Unit Module Installer	1737	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-1
							PAGE	A-1.1-10-1
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:								MISSION MODE: A
1.1 Neurological Function; Human Vestibular Function				BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
36	Service equipment as required	08	01	2.C.02	-1	Rotational Testing Device Calibrator	1667	
		08	01	2.C.02	-2	Rotational Testing Device Calibrator	1667	
		08	01	2.C.02	-3	Rotational Testing Device Calibrator	1667	
		08	01	2.C.02	-4	Rotational Testing Device Calibrator	1667	
		08	01	4.C.01		Rotational Testing Device Calibrator	1667	
		21	01	2.C.02	-1	Rotational Testing Device Disassembler	1668	
		21	01	2.C.02	-2	Rotational Testing Device Disassembler	1668	
		21	01	2.C.02	-3	Rotational Testing Device Disassembler	1668	
		21	01	2.C.02	-4	Rotational Testing Device Disassembler	1668	
		20	01	2.C.02	-1	Rotational Testing Device Assembler	1656	
		20	01	2.C.02	-2	Rotational Testing Device Assembler	1656	
		20	01	2.C.02	-3	Rotational Testing Device Assembler	1656	
		20	01	2.C.02	-4	Rotational Testing Device Assembler	1656	
		26	01	2.C.02	-1	Rotational Testing Device Module Remover	1660	
		26	01	2.C.02	-2	Rotational Testing Device Module Remover	1660	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-10-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:						MISSION MODE: A	
1.1 Neurological Function; Human Vestibular Function						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
36	(Continued)	26	01	2.C.02	-3	Rotational Testing Device Module Remover	1660
		26	01	2.C.02	-4	Rotational Testing Device Module Remover	1660
		27	01	2.C.02	-1	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-2	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-3	Rotational Testing Device Module Installer	1661
		27	01	2.C.02	-4	Rotational Testing Device Module Installer	1661
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		26	01	2.A.54		Head Proximity Device Module Remover	1717
		27	01	2.A.54		Head Proximity Device Module Installer	1718
		21	01	2.A.54		Head Proximity Device Disassembler	1721
		20	01	2.A.54		Head Proximity Device Assembler	1722
		21	01	4.D.05		Data Recorder Disassembler	1697
		21	01	4.D.10		" " "	1697
		20	01	4.D.05		Data Recorder Assembler	1698
		20	01	4.D.10		" " "	1698
		26	01	4.D.05		Data Recorder Module Remover	1699
		26	01	4.D.10		" " " "	1699
		27	01	4.D.05		Data Recorder Module Installer	1700
		27	01	4.D.10		" " " "	1700

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-1.1-10-3
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	21	01	4.B.09		Data Management Unit Disassembler	1734
		20	01	4.B.09		Data Management Unit Assembler	1735
		26	01	4.B.09		Data Management Unit Module Remover	1736
		27	01	4.B.09		Data Management Unit Module Installer	1737
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		14	01	2.C.02	-1	Rotational Testing Device Tester	1658
		14	01	2.C.02	-2	" " " "	1658
		14	01	2.C.02	-3	" " " "	1658
		14	01	2.C.02	-4	" " " "	1658
		01	01	2.B.05	-3	" " " "	1658
		01	01	2.C.02	-1	" " " "	1658
		01	01	2.C.02	-2	" " " "	1658
		01	01	2.C.02	-3	" " " "	1658
		01	01	2.C.02	-4	" " " "	1658
		14	01	2.A.53		Accelerometer Tester	1689
		01	01	2.A.53		" "	1689
		14	01	2.A.54		Head Proximity Device Tester	1715
		01	01	2.A.54		" " " "	1715
38	Check out support equipment operation	14	01	4.D.05		Data Recorder Tester	1696
		14	01	4.D.10		" " "	1696
		01	01	4.D.05		" " "	1696
		01	01	4.D.10		" " "	1696

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-1.1-10-4
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function					MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
65	Provide diagnostic support for malfunctions	07	01	2.C.02	-1	Rotational Testing Device Fault Identifier 1669
		07	01	2.C.02	-2	Rotational Testing Device Fault Identifier 1669
		07	01	2.C.02	-3	Rotational Testing Device Fault Identifier 1669
		07	01	2.C.02	-4	Rotational Testing Device Fault Identifier 1669
		07	01	4.C.02		Rotational Testing Device Fault Identifier 1669
		07	01	2.B.05	-3	Life Sciences C/D Equipment Fault Identifier 1707
		07	01	4.C.02		Life Sciences C/D Equipment Fault Identifier 1707
		07	01	2.A.54		Head Proximity Device Fault Identifier 1723
		07	01	4.C.02		Head Proximity Device Fault Identifier 1723
		07	01	4.D.05		Data Recorder Fault Identifier 0793
		07	01	4.D.10		" " " " 0793
		07	01	4.C.02		" " " " 0793
		07	01	2.E.01		Cable Fault Identifier 0794
		07	01	4.C.02		" " " " 0794
		07	01	2.A.53		Accelerometer Fault Identifier 1693
		07	01	4.C.02		" " " " 1693
		07	01	4.B.09		Data Management Unit Fault Identifier 1738
		07	01	4.C.02		Data Management Unit Fault Identifier 1738

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1			
							PAGE A-1.1-10-5			
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility						
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function							MISSION MODE: A			
							BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION					TITLE	NO.			
67	Repair	malfunctions as required	28	01	2.C.02	-1	Rotational Testing Device Repairer	1670		
			28	01	2.C.02	-2	" " " "	1670		
			28	01	2.C.02	-3	" " " "	1670		
			28	01	2.C.02	-4	" " " "	1670		
			28	01	2.B.05	-3	Life Sciences C/D Equipment Repairer	1708		
			28	01	2.A.54		Head Proximity Device Repairer	1724		
			28	01	4.D.05		Data Recorder Repairer	0798		
			28	01	4.D.10		" " "	0798		
			28	01	2.E.01		Cable Repairer	0799		
			28	01	2.A.53		Accelerometer Repairer	1694		
			28	01	4.B.09		Data Management Unit Repairer	1739		
		68	Verify	corrective actions	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
					01	01	2.B.05	-3	" " " "	1702
	14			01	2.C.02	-1	Rotational Testing Device Tester	1658		
	14			01	2.C.02	-2	" " " "	1658		
	14			01	2.C.02	-3	" " " "	1658		
	14			01	2.C.02	-4	" " " "	1658		
	01			01	2.B.05	-3	" " " "	1658		
	01			01	2.C.02	-1	" " " "	1658		
	01			01	2.C.02	-2	" " " "	1658		
	01			01	2.C.02	-3	" " " "	1658		
	01			01	2.C.02	-4	" " " "	1658		
	14			01	2.A.53		Accelerometer Tester	1689		
	01			01	2.A.53		" "	1689		
	14			01	2.A.54		Head Proximity Device Tester	1715		
	01			01	2.A.54		" " " "	1715		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-1.1-10-6	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 1.1 Neurological Function; Human Vestibular Function			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
68	(Continued)	14	01	4.D.05		Data Recorder Tester	1696
		14	01	4.D.10		" " "	1696
		01	01	4.D.05		" " "	1696
		01	01	4.D.10		" " "	1696
		14	01	4.B.09		Data Management Unit Tester	1733
		01	01	4.B.09		" " " "	1733
		14	01	2.E.01		Cable Tester	1695
		01	01	2.B.05	-3	" "	1695

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Cardiovascular Function

2.1 Use of LBNP Device to Prevent CV
Deconditioning

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-2.1-04-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Attach measuring instruments to subject	27	01	2.A.20	-1	Plethysmograph Installer	1750
		27	01	2.C.28		" "	1750
		27	01	2.A.42		Sphygmomanometer Installer	1764
		27	01	2.C.28		" "	1764
		27	01	2.A.55	-1	Electrocardiograph Installer	1778
		27	01	2.C.28		" "	1778
		27	01	3.D.03		" "	1778
		27	01	2.A.26	-3	Body Temperature Measuring Device Installer	1807
		27	01	2.C.28		Body Temperature Measuring Device Installer	1807
2	Seal instrumented subject in LBNP device	27	01	2.D.38		LBNP Device Installer	1792
		27	01	2.C.28		" " "	1792
		27	01	2.A.20	-1	" " "	1792
		27	01	2.A.42		" " "	1792
		27	01	2.A.55	-1	" " "	1792
		27	01	2.A.26	-3	" " "	1792
		32(30)	08	2.D.38		LBNP Device Wearer	1793
		32(30)	08	2.C.28		" " "	1793
		32(30)	08	2.A.20	-1	" " "	1793
		32(30)	08	2.A.42		" " "	1793
		32(30)	08	2.A.55	-1	" " "	1793
		32(30)	08	2.A.26	-3	" " "	1793
3	Permit measuring instruments to be attached	32(30)	01	2.A.20	-1	Plethysmograph Wearer	1751
		32(30)	01	2.C.28		" "	1751
		32(30)	01	2.A.42		Sphygmomanometer Wearer	1765
		32(30)	01	2.C.28		" "	1765

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-2.1-04-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
3	(Continued)	32(30)	01	2.A.55	-1	Electrocardiograph Wearer 1779
		32(30)	01	2.C.28		" " 1779
		32(30)	01	2.A.26	-3	Body Temperature Measuring Device Wearer 1808
		32(30)	01	2.C.28		Body Temperature Measuring Device Wearer 1808
32	Unstow experiment equipment	18	01	4.D.20		Stowage Container Unstower 1821
		18	01	2.D.38		" " " 1821
		18	01	2.A.20	-1	" " " 1821
		18	01	2.A.42		" " " 1821
		18	01	2.A.55	-1	" " " 1821
		18	01	2.A.26	-3	" " " 1821
		22	01	4.D.20		Stowage Container Translocator 1822
		22	01	2.D.38		" " " 1822
		22	01	2.A.20	-1	" " " 1822
		22	01	2.A.42		" " " 1822
		22	01	2.A.55	-1	" " " 1822
		22	01	2.A.26	-3	" " " 1822
		27	01	4.D.20		Stowage Container Installer 1823
		27	01	2.D.38		" " " 1823
		27	01	2.A.20	-1	" " " 1823
		27	01	2.A.42		" " " 1823
		27	01	2.A.55	-1	" " " 1823
		27	01	2.A.26	-3	" " " 1823
		18	01	2.D.38		LBNP Device Unstower 1794
		18	01	4.D.20		" " " 1794
		22	01	2.D.38		LBNP Device Translocator 1795

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1		
						PAGE A-2.1-04-3		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A			
					BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
32	(Continued)		18	01	2.A.20	-1	Plethysmograph Unstower	1752
			18	01	4.D.20		" "	1752
			22	01	2.A.20	-1	Plethysmograph Translocator	1755
			18	01	2.A.42		Sphygmomanometer Unstower	1766
			18	01	4.D.20		" "	1766
			22	01	2.A.42		Sphygmomanometer Translocator	1767
			18	01	2.A.55	-1	Electrocardiograph Unstower	1780
			18	01	4.D.20		" "	1780
			22	01	2.A.55	-1	Electrocardiograph Translocator	1781
			18	01	2.A.26	-3	Body Temperature Measuring Device Unstower	1809
			18	01	4.D.20		Body Temperature Measuring Device Unstower	1809
			22	01	2.A.26	-3	Body Temperature Measuring Device Translocator	1810
			18	01	2.B.05	-3	Life Sciences C/D Equipment Unstower	1701
34	Install experiment equipment		27	01	2.A.20	-1	Plethysmograph Installer	1750
			27	01	2.C.28		" "	1750
			27	01	2.B.05	-3	" "	1750
			27	01	2.A.42		Sphygmomanometer Installer	1764
			27	01	2.C.28		" "	1764
			27	01	2.B.05	-3	" "	1764
			27	01	2.A.55	-1	Electrocardiograph Installer	1778
			27	01	2.C.28		" "	1778
			27	01	2.B.05	-3	" "	1778
			27	01	2.A.26	-3	Body Temperature Measuring Device Installer	1807

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGE A-2.1-04-4		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					MISSION MODE: A	
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning			BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
34	(Continued)	27	01	2.C.28		Body Temperature Measuring Device Installer		1807	
		27	01	2.B.05	-3	Body Temperature Measuring Device Installer		1807	
		27	01	2.D.38		LBNP Device Installer		1792	
		27	01	2.C.28		"	"	"	1792
		27	01	2.B.05	-3	"	"	"	1792
		27	01	2.A.20	-1	"	"	"	1792
		27	01	2.A.42		"	"	"	1792
		27	01	2.A.55	-1	"	"	"	1792
		27	01	2.A.26	-3	"	"	"	1792
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester		1702	
		01	01	2.B.05		Life Sciences C/D Equipment Tester		1702	
		14	01	2.D.38		LBNP Device Tester		1796	
		01	01	2.B.05	-3	"	"	"	1796
		01	01	2.D.38		"	"	"	1796
		14	01	2.A.20	-1	Plethysmograph Tester		1753	
		01	01	2.B.05	-3	"	"	"	1753
		01	01	2.A.20	-1	"	"	"	1753
		14	01	2.A.42		Sphygmomanometer Tester		1768	
		01	01	2.B.05	-3	"	"	"	1768
		01	01	2.A.42		"	"	"	1768
		14	01	2.A.55	-1	Electrocardiograph Tester		1782	
		01	01	2.B.05	-3	"	"	"	1782
		01	01	2.A.55	-1	"	"	"	1782
		14	01	2.A.26	-3	Body Temperature Measuring Device Tester		1811	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-2.1-04-5
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	01	01	2.B.05	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
40	Check out IMS programming function	14	01	4.B.09		Data Management Unit Tester	1733
		01	01	2.B.05	-3	" " " "	1733
		01	01	4.B.09		" " " "	1733
62	Reconfigure equipment	26	01	2.D.38		LBNP Device Remover	1797
		26	01	2.C.28		" " "	1797
		26	01	2.B.05	-3	" " "	1797
		26	01	2.A.20	-1	" " "	1797
		26	01	2.A.42		" " "	1797
		26	01	2.A.55	-1	" " "	1797
		26	01	2.A.26	-3	" " "	1797
		27	01	2.D.38		LBNP Device Installer	1792
		27	01	2.C.28		" " "	1792
		27	01	2.B.05	-3	" " "	1792
		27	01	2.A.20	-1	" " "	1792
		27	01	2.A.42		" " "	1792
		27	01	2.A.55	-1	" " "	1792
		27	01	2.A.26	-3	" " "	1792
		26	01	2.A.20	-1	Plethysmograph Remover	1754
		26	01	2.C.28		" "	1754
		26	01	2.B.05	-3	" "	1754
		27	01	2.A.20	-1	Plethysmograph Installer	1750
		27	01	2.C.28		" "	1750
		27	01	2.B.05	-3	" "	1750

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-2.1-04-6
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
62	(Continued)	26	01	2.A.42		Sphygmomanometer Remover 1769
		26	01	2.C.28		" " 1769
		26	01	2.B.05	-3	" " 1769
		27	01	2.A.42		Sphygmomanometer Installer 1764
		27	01	2.C.28		" " 1764
		27	01	2.B.05	-3	" " 1764
		26	01	2.A.55	-1	Electrocardiograph Remover 1783
		26	01	2.C.28		" " 1783
		26	01	2.B.05	-3	" " 1783
		27	01	2.A.55	-1	Electrocardiograph Installer 1778
		27	01	2.C.28		" " 1778
		27	01	3.D.03		" " 1778
		27	01	2.B.05	-3	" " 1778
		26	01	2.A.26	-3	Body Temperature Measuring Device 1812
						Remover
		26	01	2.C.28		Body Temperature Measuring Device 1812
						Remover
		26	01	2.B.05	-3	Body Temperature Measuring Device 1812
						Remover
		27	01	2.A.26	-3	Body Temperature Measuring Device 1807
						Installer
		27	01	2.C.28		Body Temperature Measuring Device 1807
						Installer
		27	01	2.B.05	-3	Body Temperature Measuring Device 1807
						Installer

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-2.1-05-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT			CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.		DESCRIPTION				TITLE	NO.
57	Remove	subject instrumentation	26	01	2.D.38	LBNP Device Remover	1797
			26	01	2.C.28	" " "	1797
			26	01	2.B.05 -3	" " "	1797
			26	01	2.A.20 -1	" " "	1797
			26	01	2.A.42	" " "	1797
			26	01	2.A.55 -1	" " "	1797
			26	01	2.A.26 -3	" " "	1797
			26	01	2.A.20 -1	Plethysmograph Remover	1754
			26	01	2.C.28	" "	1754
			26	01	2.B.05 -3	" "	1754
			26	01	2.A.42	Sphygmomanometer Remover	1769
			26	01	2.C.28	" "	1769
			26	01	2.B.05 -3	" "	1769
			26	01	2.A.55 -1	Electrocardiograph Remover	1783
			26	01	2.C.28	" "	1783
			26	01	2.B.05 -3	" "	1783
			26	01	2.A.26 -3	Body Temperature Measuring Device Remover	1812
			26	01	2.C.28	Body Temperature Measuring Device Remover	1812
			26	01	2.B.05 -3	Body Temperature Measuring Device Remover	1812
59	Stow equipment		17	01	2.B.05 -3	Life Sciences C/D Equipment Stower	1706
			17	01	2.A.26 -3	Body Temperature Measuring Device Stower	1813
			17	01	4.D.20	Body Temperature Measuring Device Stower	1813

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-2.1-05-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
59	(Continued)	22	01	2.A.26	-3	Body Temperature Measuring Device Translocator 1810
		22	01	2.A.55	-1	Electrocardiograph Translocator 1781
		17	01	2.A.55		Electrocardiograph Stower 1784
		17	01	4.D.20		" " 1784
		22	01	2.A.42		Sphygmomanometer Translocator 1767
		17	01	2.A.42		Sphygmomanometer Stower 1770
		17	01	4.D.20		" " 1770
		22	01	2.A.20	-1	Plethysmograph Translocator 1755
		17	01	2.A.20		Plethysmograph Stower 1756
		17	01	4.D.20		" " 1756
		22	01	2.D.38		LBNP Device Translocator 1795
		17	01	2.D.38		LBNP Device Stower 1798
		17	01	4.D.20		" " " 1798
		26	01	4.D.20		Stowage Container Remover 1824
		26	01	2.D.38		" " " 1824
		26	01	2.A.20	-1	" " " 1824
		26	01	2.A.42		" " " 1824
		26	01	2.A.55	-1	" " " 1824
		26	01	2.A.26	-3	" " " 1824
		22	01	4.D.20		Stowage Container Translocator 1822
		22	01	2.D.38		" " " 1822
		22	01	2.A.20	-1	" " " 1822
		22	01	2.A.42		" " " 1822
		22	01	2.A.55	-1	" " " 1822
		22	01	2.A.26	-3	" " " 1822
		17	01	4.D.20		Stowage Container Stower 1825
		17	01	2.D.38		" " " 1825
		17	01	2.A.20	-1	" " " 1825
		17	01	2.A.42		" " " 1825

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1	
							PAGE A-2.1-05-3	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning							MISSION MODE: A	
							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
59	(Continued)	17	01	2.A.55	-1	Stowage Container Stower	1825	
		17	01	2.A.26	-3	" " "	1825	
60	Complete operational logs	06	01	4.D.08		Cardioangioloogy Research Data Recorder	1827	
		06	01	3.D.03	-1	Cardioangioloogy Research Data Recorder	1827	
64	Secure data for return	22	01	4.D.08		Record Keeping Materials Translocator	1710	
		22	01	4.D.05		Record Keeping Materials Translocator	1710	
		22	01	4.D.10		Record Keeping Materials Translocator	1710	
		17	01	4.D.08		Record Keeping Materials Stower	1711	
		17	01	4.D.05		" " " "	1711	
		17	01	4.D.10		" " " "	1711	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-2.1-06-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4	Remain immobile in LBNP device	32(30)	08	2.D.38		LBNP Device Wearer 1793
		32(30)	08	2.C.28		" " " 1793
		32(30)	08	2.A.20	-1	" " " 1793
		32(30)	08	2.A.42		" " " 1793
		32(30)	08	2.A.55	-1	" " " 1793
		32(30)	08	2.A.26	-3	" " " 1793
5	Activate data taking	15	01	2.B.05	-3	Data Management Unit Control 1829
		15	01	4.B.09		Actuator Data Management Unit Control 1829
6	Initiate negative pressure cycle	15	01	2.B.05	-3	LBNP Device Control Actuator 1799
		15	01	2.D.38		" " " " 1799
		15	01	2.C.28		" " " " 1799
7	Monitor blood pressure	01	01	2.B.05	-3	Human Subject Status Monitor 1741
		01	01	2.A.42		" " " " 1741
		01	01	2.C.28		" " " " 1741
		01	01	3.D.03		" " " " 1741
8	Monitor leg volume	01	01	2.B.05	-3	Human Subject Status Monitor 1741
		01	01	2.A.20	-1	" " " " 1741
		01	01	2.C.28		" " " " 1741
		01	01	3.D.03		" " " " 1741

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1		
						PAGE A-2.1-06-2		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				MISSION MODE: A	
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning			BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
48	Monitor experiment procedures	01	01	2.B.05	-3	LBNP Device Operation Monitor	1800	
		01	01	2.D.38		" " " "	1800	
		01	01	2.C.28		" " " "	1800	
		01	01	2.B.05	-3	Plethysmograph Operation Monitor	1757	
		01	01	2.A.20	-1	" " " "	1757	
		01	01	2.C.28		" " " "	1757	
		01	01	2.B.05	-3	Sphygmomanometer Operation Monitor	1771	
		01	01	2.A.42		Sphygmomanometer Operation Monitor	1771	
		01	01	2.C.28		Sphygmomanometer Operation Monitor	1771	
		01	01	2.B.05	-3	Electrocardiograph Operation Monitor	1785	
		01	01	2.A.55	-1	Electrocardiograph Operation Monitor	1785	
		01	01	2.C.28		Electrocardiograph Operation Monitor	1785	
		01	01	2.B.05	-3	Body Temperature Measuring Device Operation Monitor	1814	
		01	01	2.A.26	-3	Body Temperature Measuring Device Operation Monitor	1814	
		01	01	2.C.28		Body Temperature Measuring Device Operation Monitor	1814	
		01	01	2.B.05	-3	Life Sciences C/D Equipment Operation Monitor	1826	
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer	1740	
		02	01	3.D.03		" " " "	1740	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGE A-2.1-06-3		
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning							MISSION MODE: A		
							BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
52	(Continued)	01	01	2.B.05	-3	Human Subject Status Monitor			1741
		01	01	2.C.28		"	"	"	1741
		01	01	2.A.20	-1	"	"	"	1741
		01	01	2.A.42		"	"	"	1741
		01	01	2.A.55	-1	"	"	"	1741
		01	01	2.A.26	-3	"	"	"	1741
55	Review results with ground personnel	05	01	4.A.02		Radio Communicator			0206
		05	01	3.D.03	-1	"	"		0206
56	Plan follow-on experiments	13	01	2.C.28		Cardioangiography Research Planner			1828
		13	01	3.D.03	-1	"	"	"	1828
		13	01	2.D.38		"	"	"	1828
		13	01	2.A.20	-1	"	"	"	1828
		13	01	2.A.42		"	"	"	1828
		13	01	2.A.55	-1	"	"	"	1828
		13	01	2.A.26	-3	"	"	"	1828

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-2.1-09-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	20	01	2.D.38		LBNP Device Disassembler	1801
		21	01	2.D.38		LBNP Device Assembler	1802
		26	01	2.D.38		LBNP Device Module Remover	1803
		27	01	2.D.38		LBNP Device Module Installer	1804
		20	01	2.A.20	-1	Plethysmograph Disassembler	1758
		21	01	2.A.20		Plethysmograph Assembler	1759
		26	01	2.A.20		Plethysmograph Module Remover	1760
		27	01	2.A.20		Plethysmograph Module Installer	1761
		20	01	2.A.42		Sphygmomanometer Disassembler	1772
		21	01	2.A.42		Sphygmomanometer Assembler	1773
		26	01	2.A.42		Sphygmomanometer Module Remover	1774
		27	01	2.A.42		Sphygmomanometer Module Installer	1775
		20	01	2.A.55	-1	Electrocardiograph Disassembler	1786
		21	01	2.A.55	-1	Electrocardiograph Assembler	1787
		26	01	2.A.55	-1	Electrocardiograph Module Remover	1788
		27	01	2.A.55	-1	Electrocardiograph Module Installer	1789
		20	01	2.A.26	-3	Body Temperature Measuring Device Disassembler	1815
		21	01	2.A.26	-3	Body Temperature Measuring Device Assembler	1816
		26	01	2.A.26	-3	Body Temperature Measuring Device Module Remover	1817
		27	01	2.A.26	-3	Body Temperature Measuring Device Module Installer	1818
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		26	01	4.B.09		Data Management Unit Module Remover	1736

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-2.1-09-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning					MISSION MODE: A		
					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
36	(Continued)	27	01	4.B.09	Data Management Unit Module Installer	1737	
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	2.D.38		LBNP Device Tester	1796
		01	01	2.B.05	-3	" " "	1796
		01	01	2.D.38		" " "	1796
		14	01	2.A.20	-1	Plethysmograph Tester	1753
		01	01	2.B.05	-3	" "	1753
		01	01	2.A.20	-1	" "	1753
		14	01	2.A.42		Sphygmomanometer Tester	1768
		01	01	2.B.05	-3	" "	1768
		01	01	2.A.42		" "	1768
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		01	01	2.B.05	-3	" "	1782
		01	01	2.A.55	-1	" "	1782
		14	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.B.05	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
40	Check out IMS programming function	14	01	4.B.09		Data Management Unit Tester	1733
		01	01	2.B.05	-3	" " " "	1733
		01	01	4.B.09		" " " "	1733

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-2.1-10-1
DISCIPLINE: Life Sciences		FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning		MISSION MODE: A					
		BASIC FUNCTION: 10 Unscheduled Maintenance					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	20	01	2.D.38		LBNP Device Disassembler	1801
		21	01	2.D.38		LBNP Device Assembler	1802
		26	01	2.D.38		LBNP Device Module Remover	1803
		27	01	2.D.38		LBNP Device Module Installer	1804
		20	01	2.A.20	-1	Plethysmograph Disassembler	1758
		21	01	2.A.20		Plethysmograph Assembler	1759
		26	01	2.A.20		Plethysmograph Module Remover	1760
		27	01	2.A.20		Plethysmograph Module Installer	1761
		20	01	2.A.42		Sphygmomanometer Disassembler	1772
		21	01	2.A.42		Sphygmomanometer Assembler	1773
		26	01	2.A.42		Sphygmomanometer Module Remover	1774
		27	01	2.A.42		Sphygmomanometer Module Installer	1775
		20	01	2.A.55	-1	Electrocardiograph Disassembler	1786
		21	01	2.A.55	-1	Electrocardiograph Assembler	1787
		26	01	2.A.55	-1	Electrocardiograph Module Remover	1788
		27	01	2.A.55	-1	Electrocardiograph Module Installer	1789
		20	01	2.A.26	-3	Body Temperature Measuring Device Disassembler	1815
		21	01	2.A.26	-3	Body Temperature Measuring Device Assembler	1816
		26	01	2.A.26	-3	Body Temperature Measuring Device Module Remover	1817
		27	01	2.A.26	-3	Body Temperature Measuring Device Module Installer	1818
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		26	01	4.B.09		Data Management Unit Module Remover	1736

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-2 1-10-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	27	01	4.B.09		Data Management Unit Module Installer	1737
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	2.D.38		LBNP Device Tester	1796
		01	01	2.B.05	-3	" " "	1796
		01	01	2.D.38		" " "	1796
		14	01	2.A.20	-1	Plethysmograph Tester	1753
		01	01	2.B.05	-3	" "	1753
		01	01	2.A.20	-1	" "	1753
		14	01	2.A.42		Sphygmomanometer Tester	1768
		01	01	2.B.05	-3	" "	1768
		01	01	2.A.42		" "	1768
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		01	01	2.B.05	-3	" "	1782
		01	01	2.A.55	-1	" "	1782
		14	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.B.05	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
40	Check out IMS programming function	14	01	4.B.09		Data Management Unit Tester	1733
		01	01	2.B.05	-3	" " " "	1733
		01	01	4.B.09		" " " "	1733

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-2.1-10-3
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
65	Provide diagnostic support for malfunctions	07	01	2.B.05	-3	Life Sciences C/D Equipment Fault Identifier	1707
		07	01	4.C.02		Life Sciences C/D Equipment Fault Identifier	1707
		07	01	2.D.38		LBNP Device Fault Identifier	1805
		07	01	4.C.02		" " " "	1805
		07	01	2.A.20	-1	Plethysmograph Fault Identifier	1762
		07	01	4.C.02		" " "	1762
		07	01	2.A.42		Sphygmomanometer Fault Identifier	1776
		07	01	4.C.02		" " "	1776
		07	01	2.A.55	-1	Electrocardiograph Fault Identifier	1790
		07	01	4.C.02		Electrocardiograph Fault Identifier	1790
		07	01	2.A.26	-3	Body Temperature Measuring Device Fault Identifier	1819
		07	01	4.C.02		Body Temperature Measuring Device Fault Identifier	1819
		07	01	4.B.09		Data Management Unit Fault Identifier	1738
		07	01	4.C.02		Data Management Unit Fault Identifier	1738
67	Repair malfunctions as required	28	01	2.B.05	-3	Life Sciences C/D Equipment Repairer	1708
		28	01	2.D.38		LBNP Device Repairer	1806
		28	01	2.A.20	-1	Plethysmograph Repairer	1763
		28	01	2.A.42		Sphygmomanometer Repairer	1777
		28	01	2.A.55	-1	Electrocardiograph Repairer	1791

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-2.1-10-4
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 2.1 Cardiovascular Function; Use of LBNP Device to Prevent CV Deconditioning						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
67	(Continued)	28	01	2.A.26	-3	Body Temperature Measuring Device Repairer	1820
		28	01	4.B.09		Data Management Unit Repairer	1739
68	Verify corrective actions	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	2.D.38		LBNP Device Tester	1796
		01	01	2.B.05	-3	" " "	1796
		01	01	2.D.38		" " "	1796
		14	01	2.A.20	-1	Plethysmograph Tester	1753
		01	01	2.B.05	-3	" "	1753
		01	01	2.A.20	-1	" "	1753
		14	01	2.A.42		Sphygmomanometer Tester	1768
		01	01	2.B.05	-3	" "	1768
		01	01	2.A.42		" "	1768
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		01	01	2.B.05	-3	" "	1782
		01	01	2.A.55	-1	" "	1782
		14	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.B.05	-3	Body Temperature Measuring Device Tester	1811
		01	01	2.A.26	-3	Body Temperature Measuring Device Tester	1811
		14	01	4.B.09		Data Management Unit Tester	1733
		01	01	2.B.05	-3	" " " "	1733
		01	01	4.B.09		" " " "	1733

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Renal Function

3.1 Renal Blood Flow

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
DISCIPLINE: Life Sciences						PAGE A-3.1-04-1	
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	Disinfect equipment and work area	18	01	4.D.06	-1	Cleaning/Decontamination Equipment Unstower	1537
		22	01	4.D.06	-1	Cleaning/Decontamination Equipment Translocator	1538
		27	01	4.D.06	-1	Cleaning/Decontamination Equipment Installer	1536
		19	01	2.B.05	-3	Life Sciences C/D Equipment Cleaner	1705
		19	01	4.D.06	-1	Life Sciences C/D Equipment Cleaner	1705
		19	01	2.A.56		Electroanalytical System Cleaner	1831
		19	01	4.D.06	-1	" " "	1831
		19	01	2.A.02	-2	Photometer Cleaner	1851
		19	01	4.D.06	-1	" "	1851
		19	01	2.A.25	-1	Refractometer Cleaner	1858
		19	01	4.D.06	-1	" "	1858
		19	01	2.D.28		Biomedical Fluid Transfer Equipment Cleaner	1845
		19	01	4.D.06	-1	Biomedical Fluid Transfer Equipment Cleaner	1845
		19	01	2.D.31		Centrifuge Cleaner	1872
		19	01	4.D.06	-1	" "	1872
		19	01	2.G.05		Waste Management System Cleaner	1885
		19	01	4.D.06	-1	" " " "	1885
32	Unstow experiment equipment	18	01	2.B.05	-3	Life Sciences C/D Equipment Unstower	1701
		18	01	2.G.05		Waste Management System Unstower	1886
		18	01	2.D.05	-1	Syringe Unstower	1895
		22	01	2.D.05		Syringe Translocator	1896

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-3.1-04-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.D.05		Syringe Installer	1897
		18	01	2.D.10		Biological Sample Container Unstower	1899
		22	01	2.D.10		Biological Sample Container Translocator	1900
		27	01	2.D.10		Biological Sample Container Installer	1901
		18	01	2.A.56		Electroanalytical System Unstower	1832
		22	01	2.A.56		Electroanalytical System Translocator	1833
		27	01	2.A.56		Electroanalytical System Installer	1834
		18	01	2.D.23		Freezer Unstower	1903
		18	01	2.A.02	-2	Photometer Unstower	0053
		22	01	2.A.02	-2	Photometer Translocator	0027
		27	01	2.A.02	-2	Photometer Installer	0405
		18	01	2.A.25	-1	Refractometer Unstower	1859
		22	01	2.A.25	-1	Refractometer Translocator	1860
		27	01	2.A.25	-1	Refractometer Installer	1861
		18	01	2.D.28		Biomedical Fluid Transfer Equipment Unstower	1846
		22	01	2.D.28		Biomedical Fluid Transfer Equipment Translocator	1847
		27	01	2.D.28		Biomedical Fluid Transfer Equipment Installer	1848
		18	01	2.D.31		Centrifuge Unstower	1873
		22	01	2.D.31		Centrifuge Translocator	1874
		27	01	2.D.31		Centrifuge Installer	1875
		18	01	2.E.10	-2	Timing Device Unstower	1918
		22	01	2.E.10	-2	Timing Device Translocator	1916
		27	01	2.E.10	-2	Timing Device Installer	1913
		27	01	2.B.05	-3	" " "	1913

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-1
							PAGE	A-3.1-04-3
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow							MISSION MODE: A	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE			NO.
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702	
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702	
		14	01	2.G.05		Waste Management System Tester	1887	
		14	01	2.B.05	-3	" " " "	1887	
		01	01	2.B.05	-3	" " " "	1887	
		14	01	2.A.56		Electroanalytical System Tester	1835	
		14	01	2.B.05	-3	" " " "	1835	
		01	01	2.B.05	-3	" " " "	1835	
		14	01	2.D.23		Freezer Tester	1904	
		14	01	2.B.05	-3	" " " "	1904	
		01	01	2.B.05	-3	" " " "	1904	
		14	01	2.A.02	-2	Photometer Tester	1852	
		14	01	2.B.05	-3	" " " "	1852	
		01	01	2.B.05	-3	" " " "	1852	
		14	01	2.A.25	-1	Refractometer Tester	1862	
		14	01	2.B.05	-3	" " " "	1862	
		01	01	2.B.05	-3	" " " "	1862	
		14	01	2.D.31		Centrifuge Tester	1876	
		14	01	2.B.05	-3	" " " "	1876	
		01	01	2.B.05	-3	" " " "	1876	
62	Reconfigure equipment	26	01	2.G.05		Waste Management System Module Remover	1888	
		27	01	2.G.05		Waste Management System Module Installer	1889	
		26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-3.1-04-4
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
62	(Continued)	27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer 1704
		26	01	2.A.56		Electroanalytical System Remover 1836
		27	01	2.A.56		Electroanalytical System Installer 1834
		26	01	2.A.56		Electroanalytical System Module Remover 1837
		27	01	2.A.56		Electroanalytical System Module Installer 1838
		26	01	2.A.02	-2	Photometer Remover 1853
		27	01	2.A.02	-2	Photometer Installer 0405
		26	01	2.A.02	-2	Photometer Module Remover 0107
		27	01	2.A.02	-2	Photometer Module Installer 0108
		26	01	2.A.25	-1	Refractometer Remover 1863
		27	01	2.A.25	-1	Refractometer Installer 1861
		26	01	2.A.25	-1	Refractometer Module Remover 1864
		27	01	2.A.25	-1	Refractometer Module Installer 1865
		26	01	2.D.31		Centrifuge Remover 1877
		27	01	2.D.31		Centrifuge Installer 1875
		26	01	2.D.31		Centrifuge Module Remover 1878
		27	01	2.D.31		Centrifuge Module Installer 1879
		26	01	2.E.10	-2	Timing Device Remover 1912
		27	01	2.E.10	-2	Timing Device Installer 1913
		26	01	2.E.10	-2	Timing Device Module Remover 1914
		27	01	2.E.10	-2	Timing Device Module Installer 1915

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-1
							PAGE	A-3.1-05-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow			MISSION MODE: A					
			BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
13	Discard PAH urine samples	17	01	2.C.05	-1	Body Waste Stower	1925	
		17	01	2.C.04	-1	" " "	1925	
		17	01	2.G.05		" " "	1925	
17	Disinfect equipment and work area	18	01	4.D.06		Cleaning/Decontamination Equipment	1537	
						Unstower		
		22	01	4.D.06		Cleaning/Decontamination Equipment	1538	
						Translocator		
		27	01	4.D.06		Cleaning/Decontamination Equipment	1536	
						Installer		
		19	01	2.B.05	-3	Life Sciences C/D Equipment	1705	
						Cleaner		
		19	01	4.D.06		Life Sciences C/D Equipment	1705	
						Cleaner		
		19	01	2.A.56		Electroanalytical System Cleaner	1831	
		19	01	4.D.06		" " "	1831	
		19	01	2.A.02	-2	Photometer Cleaner	1851	
		19	01	4.D.06		" "	1851	
		19	01	2.A.25	-1	Refractometer Cleaner	1858	
		19	01	4.D.06		" "	1858	
		19	01	2.D.28		Biomedical Fluid Transfer	1845	
						Equipment Cleaner		
		19	01	4.D.06		Biomedical Fluid Transfer	1845	
						Equipment Cleaner		
		19	01	2.D.31		Centrifuge Cleaner	1872	
		19	01	4.D.06		" "	1872	
		19	01	2.G.05		Waste Management System Cleaner	1885	
		19	01	4.D.06		" " " "	1885	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-3.1-05-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	Dispose of used materials	17	01	2.E.13		Gauze Sponge Stower	1933
		17	01	2.D.10	-1	Biological Sample Container Stower	1902
		17	01	2.D.10	-2	" " " "	1902
		17	01	2.D.05	-1	Syringe Stower	1898
		17	01	4.D.06	-1	Cleaning/Decontamination Equipment Stower	1539
		17	01	2.C.05	-1	Body Waste Stower	1925
		17	01	2.C.04	-1	" " "	1925
		17	01	2.G.05		" " "	1925
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer	1740
		02	01	3.D.04	-1	" " " "	1740
55	Review results with ground personnel	05	01	4.A.02		Radio Communicator	0206
		05	01	3.D.04	-1	" "	0206
59	Stow equipment	17	01	2.B.05	-3	Life Sciences C/D Equipment Stower	1706
		26	01	4.D.06		Cleaning/Decontamination Equipment Remover	1830
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator	1538
		17	01	4.D.06		Cleaning/Decontamination Equipment Stower	1539
		17	01	2.G.05		Waste Management System Stower	1890
		26	01	2.A.56		Electroanalytical System Remover	1836
		22	01	2.A.56		Electroanalytical System Translocator	1833

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-3.1-05-3
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
59	(Continued)	17	01	2.A.56		Electroanalytical System Stower	1839
		17	01	2.D.23		Freezer Stower	1905
		26	01	2.A.02	-2	Photometer Remover	1853
		22	01	2.A.02	-2	Photometer Translocator	0027
		17	01	2.A.02	-2	Photometer Stower	0062
		26	01	2.A.25	-1	Refractometer Remover	1863
		22	01	2.A.25	-1	Refractometer Translocator	1860
		17	01	2.A.25	-1	Refractometer Stower	1866
		26	01	2.D.28		Biomedical Fluid Transfer Equipment Remover	1849
		22	01	2.D.28		Biomedical Fluid Transfer Equipment Translocator	1847
		17	01	2.D.28		Biomedical Fluid Transfer Equipment Stower	1850
		26	01	2.D.31		Centrifuge Remover	1877
		22	01	2.D.31		Centrifuge Translocator	1874
		17	01	2.D.31		Centrifuge Stower	1880
		26	01	2.E.10	-2	Timing Device Remover	1912
		22	01	2.E.10	-2	Timing Device Translocator	1916
		17	01	2.E.10	-2	Timing Device Stower	1917
60	Complete operational log	06	01	4.D.08		Urology Research Data Recorder	1934
		06	01	3.D.04	-1	" " " "	1934
64	Secure data, samples and specimen for return	26	01	4.D.08		Record Keeping Materials Remover	1937
		26	01	4.D.05		" " " "	1937
		26	01	4.D.10		" " " "	1937
		22	01	4.D.08		Record Keeping Materials Translocator	1710

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
DISCIPLINE: Life Sciences						PAGE A-3.1-05-4	
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
64	(Continued)	22	01	4.D.05	Record Keeping Materials	1710	
		22	01	4.D.10	Translocator	1710	
		17	01	4.D.08	Record Keeping Materials Stower	1711	
		17	01	4.D.05	" " " "	1711	
		17	01	4.D.10	" " " "	1711	
		26	01	2.C.05	-3 Blood Sample Remover	1938	
		26	01	2.D.10	-1 " " "	1938	
		22	01	2.C.05	-3 Blood Sample Translocator	1939	
		22	01	2.D.10	-1 " " "	1939	
		17	01	2.C.05	-3 Blood Sample Stower	1940	
		17	01	2.D.10	-1 " " "	1940	
		17	01	2.D.23	" " "	1940	
		26	01	2.C.05	-1 Body Waste Sample Remover	1926	
		26	01	2.D.10	-1 " " "	1926	
		22	01	2.C.05	-1 Body Waste Sample Translocator	1927	
		22	01	2.D.10	-1 " " "	1927	
		17	01	2.C.05	-1 Body Waste Sample Stower	1928	
		17	01	2.D.10	-1 " " "	1928	
		17	01	2.D.23	" " "	1928	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
DISCIPLINE: Life Sciences FPE/SUBGROUP: LS-1 Medical Research Facility							PAGE A-3.1-06-1
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow							MISSION MODE: A
BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Urinate in measuring device	10(30)	01	2.C.28	-1	Body Waste Controller	1929
		10(30)	01	2.C.05		" " "	1929
		10(30)	01	2.G.05		" " "	1929
2	Measure daily urine volumes	02	01	2.C.05	-1	Body Waste Measurement Observer	1930
		02	01	2.G.05		" " " "	1930
		02	01	2.C.28		" " " "	1930
		05	01	2.C.05	-1	Body Waste Measurement Recorder	1931
		05	01	2.G.05		" " " "	1931
		05	01	2.C.28		" " " "	1931
		05	01	2.F.02		" " " "	1931
3	Withdraw aliquots from urine samples	15	01	2.G.05	-1	Waste Management System Control Actuator	1945
		15	01	2.C.05		Waste Management System Control Actuator	1945
		15	01	2.D.10		Waste Management System Control Actuator	1945
4	Freeze aliquot of urine	27	01	2.C.05	-1	Body Waste Sample Installer	1932
		27	01	2.D.10	-1	" " " "	1932
		27	01	2.D.23		" " " "	1932
5	Measure urine sample specific gravity with refractometer	27	01	2.C.05	-1	Body Waste Sample Installer	1932
		27	01	2.D.10	-1	" " " "	1932
		27	01	2.A.25	-1	" " " "	1932

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1	
							PAGE A-3.1-06-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					
EXPERIMENT:						MISSION MODE: A		
3.1 Renal Function; Renal Blood Flow					BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
5	(Continued)	15	01	2.A.25	-1	Refractometer Control Actuator		1867
		15	01	2.B.05	-3	" " "		1867
		02	01	2.A.25	-1	Body Waste Measurement Observer		1930
		02	01	2.C.05	-1	" " " "		1930
		02	01	2.B.05	-3	" " " "		1930
		05	01	2.C.05	-1	Body Waste Measurement Recorder		1931
		05	01	2.F.02		" " " "		1931
		05	01	2.C.28		" " " "		1931
		05	01	2.A.25	-1	" " " "		1931
6	Measure urine Na and pH electro-analytically	27	01	2.C.05	-1	Body Waste Sample Installer		1932
		27	01	2.D.10	-1	" " " "		1932
		27	01	2.A.56		" " " "		1932
		15	01	2.A.56		Electroanalytical System Control Actuator		1840
		15	01	2.B.05	-3	Electroanalytical System Control Actuator		1840
		02	01	2.A.56		Body Waste Measurement Observer		1930
		02	01	2.C.05	-1	" " " "		1930
		02	01	2.B.05	-3	" " " "		1930
		05	01	2.C.05	-1	Body Waste Measurement Recorder		1931
		05	01	2.C.28		" " " "		1931
		05	01	2.A.56		" " " "		1931
		05	01	2.F.02		" " " "		1931
		7	Measure quantity of PAH for injection	10	01	2.C.04	-1	Syringe Controller
10	01			2.D.05	-1	" "		1597

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
DISCIPLINE: Life Sciences FPE/SUBGROUP: LS-1 Medical Research Facility							PAGE A-3.1-06-3
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow							MISSION MODE: A
BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Administer PAH by IV injection	13	01	2.C.28		Human Subject Injection Site Determiner	1946
		10	01	2.D.05	-1	Syringe Controller	1597
		10	01	2.C.04	-1	" "	1597
		10	01	2.C.28		" "	1597
9	Receive PAH by IV injection	33(30)	01	2.C.28		PAH Injection Receiver	1948
		33(30)	01	2.C.04	-1	" " "	1948
		33(30)	01	2.D.05	-1	" " "	1948
10	Urinate in measuring device at prescribed time	02	01	2.B.05	-3	Timing Device Observer	1919
		02	01	2.E.10	-2	" " "	1919
		05	01	2.C.28		Urology Research Schedule Communicator	1949
		10(30)	01	2.C.28		Body Waste Controller	1929
		10(30)	01	2.C.05	-1	" " "	1929
		10(30)	01	2.G.05		" " "	1929
11	Withdraw venous blood sample	13	01	2.C.28		Human Subject Withdrawal Site Determiner	1947
		10	01	2.D.05	-1	Syringe Controller	1597
		10	01	2.C.05	-3	" "	1597
		10	01	2.C.28		" "	1597
12	Permit venous blood sample withdrawal	34(30)	01	2.C.28		Blood Sample Donor	1941
		34(30)	01	2.C.05	-3	" " "	1941
		34(30)	01	2.D.05	-1	" " "	1941

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGEA-3.1-06-4		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility						
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow			BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
14	Add PAH sample volumes to daily urine volumes for each subject	06 06	01 01	2.C.05 2.C.28	-1	Urology Research Data Processor " " " "	1935 1935		
15	Analyze venous blood spectrophotometrically	27	01	2.C.05	-3	Blood Sample Installer	1942		
		27	01	2.A.02	-2	" " " "	1942		
		27	01	2.D.10	-1	" " " "	1942		
		15	01	2.A.02	-2	Photometer Control Actuator	0414		
		15	01	2.B.05	-3	" " " "	0414		
		02	01	2.A.02	-2	Blood Sample Measurement Observer	1943		
		02	01	2.B.05	-3	" " " "	1943		
		02	01	2.C.05	-3	" " " "	1943		
		05	01	2.C.05	-3	Blood Sample Measurement Recorder	1944		
		05	01	2.C.28		" " " "	1944		
		05	01	2.A.02	-2	" " " "	1944		
		05	01	2.F.02		" " " "	1944		
16	Analyze PAH urine samples spectrophotometrically	27	01	2.C.05	-1	Body Waste Sample Installer	1932		
		27	01	2.A.02	-2	" " " "	1932		
		27	01	2.D.10	-1	" " " "	1932		
		15	01	2.A.02	-2	Photometer Control Actuator	0414		
		15	01	2.B.05	-3	" " " "	0414		
		02	01	2.A.02	-2	Body Waste Measurement Observer	1930		
		02	01	2.B.05	-3	" " " "	1930		
		02	01	2.C.05	-1	" " " "	1930		
		05	01	2.C.05	-1	Body Waste Measurement Recorder	1931		
		05	01	2.C.28		" " " "	1931		
		05	01	2.A.02	-2	" " " "	1931		
		05	01	2.F.02		" " " "	1931		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGE A-3.1-06-5		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility					MISSION MODE: A	
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow			BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
52	Monitor physical status of test subject	02	01	2.C.28	-1 -3	Human Subject Status Observer			1740
		02	01	3.D.04		" " " "			1740
		01	01	2.B.05		Human Subject Status Monitor			1741
		01	01	2.C.28		" " " "			1741
55	Review results with ground personnel	05	01	4.A.02	-1	Radio Communicator			0206
		05	01	3.D.04		" "			0206
56	Plan follow-on experiments	13	01	2.C.28	-1 -2 -1	Urology Research Planner			1936
		13	01	3.D.04		" " "			1936
		13	01	2.G.05		" " "			1936
		13	01	2.A.56		" " "			1936
		13	01	2.A.02		" " "			1936
		13	01	2.A.25		" " "			1936
		13	01	2.D.28		" " "			1936
		13	01	2.C.04		" " "			1936
		13	01	2.C.05		" " "			1936
60	Complete operational log	06	01	4.D.08	-1	Urology Research Data Recorder			1934
		06	01	3.D.04		" " " "			1934

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-3.1-09-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		20	01	2.G.05		Waste Management System Disassembler	1891
		21	01	2.G.05		Waste Management System Assembler	1892
		26	01	2.G.05		Waste Management System Module Remover	1888
		27	01	2.G.05		Waste Management System Module Installer	1889
		20	01	2.A.56		Electroanalytical System Disassembler	1841
		21	01	2.A.56		Electroanalytical System Assembler	1842
		26	01	2.A.56		Electroanalytical System Module Remover	1837
		27	01	2.A.56		Electroanalytical System Module Installer	1838
		20	01	2.D.23		Freezer Disassembler	1906
		21	01	2.D.23		Freezer Assembler	1907
		26	01	2.D.23		Freezer Module Remover	1908
		27	01	2.D.23		Freezer Module Installer	1909
		20	01	2.A.02	-2	Photometer Disassembler	1854
		21	01	2.A.02	-2	Photometer Assembler	1855
		26	01	2.A.02	-2	Photometer Module Remover	0107
		27	01	2.A.02	-2	Photometer Module Installer	0108
		20	01	2.A.25	-1	Refractometer Disassembler	1868
		21	01	2.A.25	-1	Refractometer Assembler	1869
		26	01	2.A.25	-1	Refractometer Module Remover	1864

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-3.1-09-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	27	01	2.A.25	-1	Refractometer Module Installer	1865
		20	01	2.D.31		Centrifuge Disassembler	1881
		21	01	2.D.31		Centrifuge Assembler	1882
		26	01	2.D.31		Centrifuge Module Remover	1878
		27	01	2.D.31		Centrifuge Module Installer	1879
		20	01	2.E.10	-2	Timing Device Disassembler	1920
		21	01	2.E.10	-2	Timing Device Assembler	1921
		26	01	2.E.10	-2	Timing Device Module Remover	1914
		27	01	2.E.10	-2	Timing Device Module Installer	1915
37	Check out experiment equipment	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	2.G.05		Waste Management System Tester	1887
		14	01	2.B.05	-3	" " " "	1887
		01	01	2.B.05	-3	" " " "	1887
		14	01	2.A.56		Electroanalytical System Tester	1835
		14	01	2.B.05	-3	" " " "	1835
		01	01	2.B.05	-3	" " " "	1835
		14	01	2.D.23		Freezer Tester	1904
		14	01	2.B.05	-3	" " " "	1904
		01	01	2.B.05	-3	" " " "	1904
		14	01	2.A.02	-2	Photometer Tester	1852
		14	01	2.B.05	-3	" " " "	1852
		01	01	2.B.05	-3	" " " "	1852
		14	01	2.A.25	-1	Refractometer Tester	1862
		14	01	2.B.05	-3	" " " "	1862

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-3.1-09-3	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility			
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	01	01	2.B.05	-3	Refractometer Tester	1862
		14	01	2.D.31		Centrifuge Tester	1876
		14	01	2.B.05	-3	" "	1876
		01	01	2.B.05	-3	" "	1876

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-3.1-10-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:						MISSION MODE: A	
3.1 Renal Function; Renal Blood Flow						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		20	01	2.G.05		Waste Management System Disassembler	1891
		21	01	2.G.05		Waste Management System Assembler	1892
		26	01	2.G.05		Waste Management System Module Remover	1888
		27	01	2.G.05		Waste Management System Module Installer	1889
		20	01	2.A.56		Electroanalytical System Disassembler	1841
		21	01	2.A.56		Electroanalytical System Assembler	1842
		26	01	2.A.56		Electroanalytical System Module Remover	1837
		27	01	2.A.56		Electroanalytical System Module Installer	1838
		20	01	2.D.23		Freezer Disassembler	1906
		21	01	2.D.23		Freezer Assembler	1907
		26	01	2.D.23		Freezer Module Remover	1908
		27	01	2.D.23		Freezer Module Installer	1909
		20	01	2.A.02	-2	Photometer Disassembler	1854
		21	01	2.A.02	-2	Photometer Assembler	1855
		26	01	2.A.02	-2	Photometer Module Remover	0107
		27	01	2.A.02	-2	Photometer Module Installer	0108
		20	01	2.A.25	-1	Refractometer Disassembler	1868
		21	01	2.A.25	-1	Refractometer Assembler	1869
		26	01	2.A.25	-1	Refractometer Module Remover	1864

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-3.1-10-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP:				
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	27	01	2.A.25	-1	Refractometer Module Installer	1865
		20	01	2.D.31		Centrifuge Disassembler	1881
		21	01	2.D.31		Centrifuge Assembler	1882
		26	01	2.D.31		Centrifuge Module Remover	1878
		27	01	2.D.31		Centrifuge Module Installer	1879
		20	01	2.E.10	-2	Timing Device Disassembler	1920
		21	01	2.E.10	-2	Timing Device Assembler	1921
		26	01	2.E.10	-2	Timing Device Module Remover	1914
		27	01	2.E.10	-2	Timing Device Module Installer	1915
37	Check out experiment equipment operation	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		" " " " "	1702
		14	01	2.G.05		Waste Management System Tester	1887
		14	01	2.B.05	-3	" " " "	1887
		01	01	2.B.05	-3	" " " "	1887
		14	01	2.A.56		Electroanalytical System Tester	1835
		14	01	2.B.05	-3	" " " "	1835
		01	01	2.B.05	-3	" " " "	1835
		14	01	2.D.23		Freezer Tester	1904
		14	01	2.B.05	-3	" "	1904
		01	01	2.B.05	-3	" "	1904
		14	01	2.A.02	-2	Photometer Tester	1852
		14	01	2.B.05	-3	" "	1852
		01	01	2.B.05	-3	" "	1852
		14	01	2.A.25	-1	Refractometer Tester	1862
		14	01	2.B.05	-3	" "	1862
		01	01	2.B.05	-3	" "	1862
		14	01	2.D.31		Centrifuge Tester	1876
		14	01	2.B.05	-3	" "	1876
		01	01	2.B.05	-3	" "	1876

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1		
						PAGE A-3.1-10-3		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				MISSION MODE: A	
EXPERIMENT:								
3.1 Renal Function; Renal Blood Flow						BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
65	Provide diagnostic support for malfunctions	07	01	2.B.05	-3	Life Sciences C/D Equipment Fault Identifier	1707	
		07	01	4.C.02		Life Sciences C/D Equipment Fault Identifier	1707	
		07	01	2.G.05		Waste Management System Fault Identifier	1893	
		07	01	4.C.02		Waste Management System Fault Identifier	1893	
		07	01	2.A.56		Electroanalytical System Fault Identifier	1843	
		07	01	4.C.02		Electroanalytical System Fault Identifier	1843	
		07	01	2.D.23		Freezer Fault Identifier	1910	
		07	01	4.C.02		" " "	1910	
		07	01	2.A.02	-2	Photometer Fault Identifier	1856	
		07	01	4.C.02		" " "	1856	
		07	01	2.A.25	-1	Refractometer Fault Identifier	1870	
		07	01	4.C.02		" " "	1870	
		07	01	2.D.31		Centrifuge Fault Identifier	1883	
		07	01	4.C.02		" " "	1883	
		07	01	2.E.10	-2	Timing Device Fault Identifier	1922	
		07	01	4.C.02		" " " "	1922	
67	Repair malfunctions as required	28	01	2.B.05	-3	Life Sciences C/D Equipment Repairer	1708	
		28	01	2.G.05		Waste Management System Repairer	1894	
		28	01	2.A.56		Electroanalytical System Repairer	1844	
		28	01	2.D.23		Freezer Repairer	1911	
		28	01	2.A.02	-2	Photometer Repairer	1857	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility			PAGE A-3.1-10-4
EXPERIMENT: 3.1 Renal Function; Renal Blood Flow						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
67	(Continued)	28	01	2.A.25	-1	Refractometer Repairer	1871
		28	01	2.D.31		Centrifuge Repairer	1884
		28	01	2.E.10	-2	Timing Device Repairer	1923
68	Verify corrective actions	14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	2.G.05		Waste Management System Tester	1887
		14	01	2.B.05	-3	" " " "	1887
		01	01	2.B.05	-3	" " " "	1887
		14	01	2.A.56		Electroanalytical System Tester	1835
		14	01	2.B.05	-3	" " " "	1835
		01	01	2.B.05	-3	" " " "	1835
		14	01	2.D.23		Freezer Tester	1904
		14	01	2.B.05	-3	" " " "	1904
		01	01	2.B.05	-3	" " " "	1904
		14	01	2.A.02	-2	Photometer Tester	1852
		14	01	2.B.05	-3	" " " "	1852
		01	01	2.B.05	-3	" " " "	1852
		14	01	2.A.25	-1	Refractometer Tester	1862
		14	01	2.B.05	-3	" " " "	1862
		01	01	2.B.05	-3	" " " "	1862
		14	01	2.D.31		Centrifuge Tester	1876
		14	01	2.B.05	-3	" " " "	1876
		01	01	2.B.05	-3	" " " "	1876

FLIGHT EXPERIMENT TASK-SKILLS

SERIES LS-1

PAGE A-3.1-10-5

DISCIPLINE: Life Sciences

FPE/SUBGROUP: LS-1 Medical Research Facility

EXPERIMENT:

MISSION MODE: A

3.1 Renal Function; Renal Blood Flow

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
68	(Continued)	14	01	2.B.05	-3	Timing Device Tester	1924
		01	01	2.E.10	-2	" " "	1924

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DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

7.0 Hematologic Function

7.1 Blood Volume and Red Cell Life
Span

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FLIGHT EXPERIMENT TASK-SKILLS

SERIES LS-1

PAGE A-7.1-00-1

DISCIPLINE: Life Sciences

FPE/SUBGROUP: LS-1 Medical Research Facility

EXPERIMENT:

7.1 Hematologic Function; Blood Volume and Red Cell Life Span

MISSION MODE: A

BASIC FUNCTION: N/A

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
	(There are no inflight tasks for this experiment)					(None)	0000

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DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-1 Medical Research Facility

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

10.0 Clinical Therapeutic Function

10.1 Exercise Conditioning

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1
							PAGE A-10.1-04-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Attach/don sensor instruments	27	01	2.C.28	-1	Electrocardiograph Installer	1778
		27	01	2.A.55		" "	1778
2	Set ergometer to preestablished workload	13	01	2.C.28	-1 -3	Exercise Conditioning Research Planner	1982
		13	01	3.D.09		Exercise Conditioning Research Planner	1982
		15	01	2.A.37		Ergometer Control Actuator	1951
		15	01	2.B.05		" " "	1951
32	Unstow experiment equipment	18	01	2.B.05	-3 -1 -1	Life Sciences C/D Equipment Unstower	1701
		18	01	2.A.37		Ergometer Unstower	1952
		18	01	2.A.55		Electrocardiograph Unstower	1780
		18	01	2.A.57		Cardiotachometer Unstower	1968
		18	01	2.E.10		Timing Device Unstower	1918
34	Install experiment equipment	22	01	2.A.55	-1 -3	Electrocardiograph Translocator	1781
		26	01	2.A.55		Electrocardiograph Installer	1778
		26	01	2.B.05		" "	1778
		26	01	2.C.28	-3	" "	1778
		22	01	2.A.37		Ergometer Translocator	1953
		26	01	2.A.37		Ergometer Installer	1954
		26	01	2.B.05	-3	" "	1954
		22	01	2.A.57		Cardiotachometer Translocator	1969
		26	01	2.A.57		Cardiotachometer Installer	1970
		26	01	2.A.55	-1	" "	1970

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-10.1-04-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning			MISSION MODE: A				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.B.05	-3	Cardiotachometer Installer	1970
		22	01	2.E.10		Timing Device Translocator	1916
		26	01	2.E.10		Timing Device Installer	1913
		26	01	2.B.05	-3	" " "	1913
37	Check out experiment equipment	14	01	2.A.37	-1	Ergometer Tester	1955
		14	01	2.B.05	-3	" "	1955
		01	01	2.B.05	-3	" "	1955
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		14	01	2.B.05	-3	" "	1782
		01	01	2.B.05		" "	1782
		14	01	2.A.57		Cardiotachometer Tester	1971
		14	01	2.B.05	-3	" "	1971
		01	01	2.B.05	-3	" "	1971
		14	01	2.E.10		Timing Device Tester	1924
		14	01	2.B.05	-3	" " "	1924
		01	01	2.B.05	-3	" " "	1924
		14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05		Life Sciences C/D Equipment Tester	1702
		14	01	4.B.09		Data Management Unit Tester	1733
		14	01	2.B.05	-3	" " " "	1733
		01	01	2.B.05	-3	" " " "	1733

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-10.1-05-1	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Stow equipment	16	01	2.B.05	-3	Life Sciences C/D Equipment Control Deactuator	1966
		17	01	2.B.05	-3	Life Sciences C/D Equipment Stower	1706
		16	01	2.B.05	-3	Ergometer Control Deactuator	1956
		16	01	2.A.37	-1	" " "	1956
		26	01	2.A.37	-1	Ergometer Remover	1957
		22	01	2.A.37	-1	Ergometer Translocator	1953
		17	01	2.A.37	-1	Ergometer Stower	1958
		26	01	2.C.28		Electrocardiograph Remover	1783
		26	01	2.A.55	-1	" "	1783
		22	01	2.A.55		Electrocardiograph Translocator	1781
		17	01	2.A.55		Electrocardiograph Stower	1784
		26	01	2.A.57		Cardiotachometer Remover	1972
		26	01	2.A.55	-1	" "	1972
		22	01	2.A.57		Cardiotachometer Translocator	1969
		17	01	2.A.57		Cardiotachometer Stower	1973
		26	01	2.E.10		Timing Device Remover	1912
		26	01	2.B.05	-3	" " "	1912
		22	01	2.E.10		Timing Device Translocator	1916
		17	01	2.E.10		Timing Device Stower	1917
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer	1740
		02	01	3.D.09		" " " "	1740
		02	01	3.D.03		" " " "	1740
55	Review results with ground personnel	05	01	4.A.02		Radio Communicator	0206
		05	01	3.D.09		" "	0206

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGE A-10.1-06-1		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility						
EXPERIMENT:							MISSION MODE: A		
10.1 Clinical/Therapeutic Function; Exercise Conditioning					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			NO.
NO.	DESCRIPTION					TITLE			
3	Exercise on bicycle ergometer	10(30) 10(30)	01 01	2.C.28 2.A.37	-1	Ergometer Controller " "			1959 1959
4	Monitor heart rate display	01 01 01 01	01 01 01 01	2.B.05 2.A.55 2.C.28 2.A.57	-3 -1	Human Subject Heart Rate Monitor " " " " " " " " " " " " " " "			1985 1985 1985 1985
6	Select heart rate display mode	13 13 13 13 15 15	01 01 01 01 01 01	2.B.05 2.A.57 2.C.28 3.D.09 2.B.05 2.A.57	-3 -3	Exercise Conditioning Research Planner Exercise Conditioning Research Planner Exercise Conditioning Research Planner Exercise Conditioning Research Planner Cardiotachometer Control Actuator " " "			1982 1982 1982 1982 1974 1974
46	Initiate measurement sequence	15 15 15 15 15	01 01 01 01 01	2.B.05 2.A.37 2.B.05 2.A.55 2.B.05	-3 -1 -3 -1 -3	Life Sciences C/D Equipment Control Actuator Ergometer Control Actuator " " " Electrocardiograph Control Actuator Electrocardiograph Control Actuator			1967 1951 1951 1950 1950

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-1		
							PAGE A-10.1-06-2		
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-1 Medical Research Facility				MISSION MODE: A	
EXPERIMENT:				10.1 Clinical/Therapeutic Function; Exercise Conditioning				BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
46	(Continued)	15	01	2.A.57	-3	Cardiotachometer Control Actuator	1974		
		15	01	2.B.05		" " "	1974		
		15	01	2.E.10		Timing Device Control Actuator	1981		
		15	01	2.B.05	-3	" " " "	1981		
		15	01	4.B.09		Data Management Unit Control Actuator	1829		
		15	01	2.B.05	-3	Data Management Unit Control Actuator	1829		
		05	01	2.C.28		Exercise Conditioning Research Instruction Communicator	1983		
		05	01	3.D.09		Exercise Conditioning Research Instruction Communicator	1983		
52	Monitor physical status of test subject	02	01	2.C.28		Human Subject Status Observer	1740		
		02	01	3.D.09		" " " "	1740		
		02	01	3.D.03		" " " "	1740		
		01	01	2.B.05	-3	Human Subject Status Monitor	1741		
		01	01	2.C.28		" " " "	1741		
		01	01	2.A.55	-1	" " " "	1741		
		01	01	2.A.57		" " " "	1741		
55	Review results with ground personnel	05	01	4.A.02		Radio Communicator	0206		
		05	01	3.D.09		" "	0206		
60	Complete operational log	06	01	4.D.08		Exercise Conditioning Research Recorder	1984		
		06	01	3.D.09		Exercise Conditioning Research Recorder	1984		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-10.1-09-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		20	01	2.A.37	-1	Ergometer Disassembler	1960
		21	01	2.A.37	-1	Ergometer Assembler	1961
		26	01	2.A.37	-1	Ergometer Module Remover	1962
		27	01	2.A.37	-1	Ergometer Module Installer	1963
		20	01	2.A.55	-1	Electrocardiograph Disassembler	1786
		21	01	2.A.55	-1	Electrocardiograph Assembler	1787
		26	01	2.A.55	-1	Electrocardiograph Module Remover	1788
		27	01	2.A.55	-1	Electrocardiograph Module Installer	1789
		20	01	2.A.57		Cardiotachometer Disassembler	1975
		21	01	2.A.57		Cardiotachometer Assembler	1976
		26	01	2.A.57		Cardiotachometer Module Remover	1977
		27	01	2.A.57		Cardiotachometer Module Installer	1978
		20	01	2.E.10		Timing Device Disassembler	1920
		21	01	2.E.10		Timing Device Assembler	1921
		26	01	2.E.10		Timing Device Module Remover	1914
		27	01	2.E.10		Timing Device Module Installer	1915
		26	01	4.B.09		Data Management Unit Module Remover	1736
		27	01	4.B.09		Data Management Unit Module Installer	1737
37	Check out experiment equipment	14	01	2.A.37	-1	Ergometer Tester	1955
		14	01	2.B.05	-3	" "	1955

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-10.1-09-2	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	01	01	2.B.05	-3	Ergometer Tester	1955
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		14	01	2.B.05	-3	" "	1782
		01	01	2.B.05		" "	1782
		14	01	2.A.57		Cardiotachometer Tester	1971
		14	01	2.B.05	-3	" "	1971
		01	01	2.B.05	-3	" "	1971
		14	01	2.E.10		Timing Device Tester	1924
		14	01	2.B.05	-3	" " "	1924
		01	01	2.B.05	-3	" " "	1924
		14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05	-3	" " " " "	1702
		14	01	4.B.09		Data Management Unit Tester	1733
		14	01	2.B.05	-3	" " " "	1733
		01	01	2.B.05	-3	" " " "	1733

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-10.1-10-1	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Service equipment as required	26	01	2.B.05	-3	Life Sciences C/D Equipment Module Remover	1703
		27	01	2.B.05	-3	Life Sciences C/D Equipment Module Installer	1704
		20	01	2.A.37	-1	Ergometer Disassembler	1960
		21	01	2.A.37	-1	Ergometer Assembler	1961
		26	01	2.A.37	-1	Ergometer Module Remover	1962
		27	01	2.A.37	-1	Ergometer Module Installer	1963
		20	01	2.A.55	-1	Electrocardiograph Disassembler	1786
		21	01	2.A.55	-1	Electrocardiograph Assembler	1787
		26	01	2.A.55	-1	Electrocardiograph Module Remover	1788
		27	01	2.A.55	-1	Electrocardiograph Module Installer	1789
		20	01	2.A.57		Cardiotachometer Disassembler	1975
		21	01	2.A.57		Cardiotachometer Assembler	1976
		26	01	2.A.57		Cardiotachometer Module Remover	1977
		27	01	2.A.57		Cardiotachometer Module Installer	1978
		20	01	2.E.10		Timing Device Disassembler	1920
		21	01	2.E.10		Timing Device Assembler	1921
		26	01	2.E.10		Timing Device Module Remover	1914
		27	01	2.E.10		Timing Device Module Installer	1915
		26	01	4.B.09		Data Management Unit Module Remover	1736
		27	01	4.B.09		Data Management Unit Module Installer	1737
37	Check out experiment equipment	14	01	2.A.37	-1	Ergometer Tester	1955
		14	01	2.B.05	-3	" "	1955

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1
						PAGE A-10:1-10-2
DISCIPLINE: Life Sciences		FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning		MISSION MODE: A				
BASIC FUNCTION: 10 Unscheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
37	(Continued)	01	01	2.B.05	-3	Ergometer Tester 1955
		14	01	2.A.55	-1	Electrocardiograph Tester 1782
		14	01	2.B.05	-3	" " 1782
		01	01	2.B.05		" " 1782
		14	01	2.A.57		Cardiotachometer Tester 1971
		14	01	2.B.05	-3	" " 1971
		01	01	2.B.05	-3	" " 1971
		14	01	2.E.10		Timing Device Tester 1924
		14	01	2.B.05	-3	" " " " 1924
		01	01	2.B.05	-3	" " " " 1924
		14	01	2.B.05	-3	Life Sciences C/D Equipment Tester 1702
		01	01	2.B.05	-3	Life Sciences C/D Equipment Tester 1702
		14	01	4.B.09		Data Management Unit Tester 1733
		14	01	2.B.05	-3	" " " " 1733
		01	01	2.B.05	-3	" " " " 1733
65	Provide diagnostic support for malfunctions	07	01	2.B.05	-3	Life Sciences C/D Equipment Fault Identifier 1707
		07	01	4.C.02		Life Sciences C/D Equipment Fault Identifier 1707
		07	01	2.A.37	-1	Ergometer Fault Identifier 1964
		07	01	4.C.02		" " " " 1964
		07	01	2.A.55	-1	Electrocardiograph Fault Identifier 1790
		07	01	4.C.02		Electrocardiograph Fault Identifier 1790

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-1
						PAGE	A-10.1-10-3
DISCIPLINE: Life Sciences			EPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT: 10.1 Clinical/Therapeutic Function; Exercise Conditioning						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
65	(Continued)	07	01	2.A.57		Cardiotachometer Fault Identifier	1979
		07	01	4.C.02		" " "	1979
		07	01	2.E.10		Timing Device Fault Identifier	1922
		07	01	4.C.02		" " " "	1922
		07	01	4.B.09		Data Management Unit Fault Identifier	1738
		07	01	4.C.02		Data Management Unit Fault Identifier	1738
67	Repair malfunctions as required	28	01	2.B.05	-3	Life Sciences C/D Equipment Repairer	1708
		28	01	2.A.37	-1	Ergometer Repairer	1965
		28	01	2.A.55	-1	Electrocardiograph Repairer	1791
		28	01	2.A.57		Cardiotachometer Repairer	1980
		28	01	2.E.10		Timing Device Repairer	1923
		28	01	4.B.09		Data Management Unit Repairer	1739
68	Verify corrective actions	14	01	2.A.37	-1	Ergometer, Tester	1955
		14	01	2.B.05	-3	" "	1955
		01	01	2.B.05	-3	" "	1955
		14	01	2.A.55	-1	Electrocardiograph Tester	1782
		14	01	2.B.05	-3	" "	1782
		01	01	2.B.05		" "	1782
		14	01	2.A.57		Cardiotachometer Tester	1971
		14	01	2.B.05	-3	" "	1971
		01	01	2.B.05	-3	" "	1971
		14	01	2.E.10		Timing Device Tester	1924

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-1	
						PAGE A-10.1-10-4	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-1 Medical Research Facility				
EXPERIMENT:						MISSION MODE: A	
10.1 Clinical/Therapeutic Function; Exercise Conditioning						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
68	(Continued)	14	01	2.B.05	-3	Timing Device Tester	1924
		01	01	2.B.05	-3	" " "	1924
		14	01	2.B.05	-3	Life Sciences C/D Equipment Tester	1702
		01	01	2.B.05	-3	" " " " "	1702
		14	01	4.B.09		Data Management Unit Tester	1733
		14	01	2.B.05	-3	" " " "	1733
		01	01	2.B.05	-3	" " " "	1733

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-6 Life Support and Protective Systems

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

5.0 Advanced Two-Gas Atmosphere
Supply and Control System

11.0 EVA Suit and Biopack

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-6 Life Support and Protective Systems

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

5.0 Advanced Two-Gas Atmosphere Supply
and Control System

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-5.0-04-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Unpack specimen unit	18	01	2.C.29	-1	Atmosphere Supply/Control System Unstower	1162
		18	01	2.C.29	-2	Atmosphere Supply/Control System Unstower	1162
2	Check specimen unit	03	01	2.C.29	-1	Atmosphere Supply/Control System Inspector	1986
		03	01	2.C.29	-2	Atmosphere Supply/Control System Inspector	1986
		14	01	2.B.05	-4	Atmosphere Supply/Control System Tester	1987
		14	01	2.C.29	-1	Atmosphere Supply/Control System Tester	1987
		14	01	2.C.29	-2	Atmosphere Supply/Control System Tester	1987
		01	01	2.C.29	-2	Atmosphere Supply/Control System Tester	1987
3	Connect specimen unit to LSSTU	27	01	2.C.29	-1	Atmosphere Supply/Control System Installer	1988
		27	01	2.C.29	-2	Atmosphere Supply/Control System Installer	1988
		27	01	2.B.05	-4	Atmosphere Supply/Control System Installer	1988
4	Check unit interfaces with LSSTU	03	01	2.C.29	-1	Atmosphere Supply/Control System Inspector	1986
		03	01	2.C.29	-2	Atmosphere Supply/Control System Inspector	1986

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6	
							PAGE A-5.0-04-2	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System				MISSION MODE: A				
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
4	(Continued)	03	01	2.B.05	-4	Atmosphere Supply/Control System Inspector	1986	
5	Turn equipment on	15	01	2.B.05	-5	Life Sciences C/D Equipment Control Actuator	1967	
		15	01	2.B.05	-4	Life Sciences C/D Equipment Control Actuator	1967	
		15	01	2.B.05	-4	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.C.29	-1	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.C.29	-2	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.B.05	-4	Data Management Unit Control Actuator	1829	
		15	01	4.B.09		Data Management Unit Control Actuator	1829	
6	Check specimen unit operation	01	01	2.B.05	-4	Atmosphere Supply/Control System Operation Monitor	1129	
		01	01	2.C.29	-1	Atmosphere Supply/Control System Operation Monitor	1129	
		01	01	2.C.29	-2	Atmosphere Supply/Control System Operation Monitor	1129	
7	Check facility equipment operation	01	01	2.B.05	-5	Atmosphere Supply/Control System Operation Monitor	1129	
		01	01	1.A.03	-8	Atmosphere Supply/Control System Operation Monitor	1129	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-6	
							PAGE	A-5.0-04-3	
DISCIPLINE: Life Sciences			EPE/SUBGROUP: LS-6 Life Support and Protective Systems					MISSION MODE: A	
EXPERIMENT:									
5.0 Advanced Two-Gas Atmosphere Supply and Control System					BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
7	(Continued)	01	01	2.B.05	-5	Data Management Unit Operation Monitor	1995		
		01	01	4.B.09		Data Management Unit Operation Monitor	1995		
8	Check operation of LSSTU controls	14	01	2.B.05	-4	Life Sciences C/D Equipment Tester	1702		
		14	01	2.C.29	-1	Life Sciences C/D Equipment Tester	1702		
		14	01	2.C.29	-2	Life Sciences C/D Equipment Tester	1702		
		01	01	2.B.05	-4	Life Sciences C/D Equipment Tester	1702		
9	Check data system operation	01	01	2.B.05	-5	Data Management Unit Operation Monitor	1995		
		01	01	4.B.09		Data Management Unit Operation Monitor	1995		
34	Make motion picture recordings	10	01	4.D.04	-9	Camera Controller	0335		
		10	01	2.C.29	-1	" "	0335		
		10	01	2.C.29	-2	" "	0335		
		10	01	2.B.05	-4	" "	0335		
35	Make audio tape recordings	10	01	4.D.05	-1	Tape Recorder Controller	0862		
		05	01	3.N.05		Atmosphere Supply/Control Research Data Communicator	1989		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
DISCIPLINE: Life Sciences						PAGE A-5.0-04-4	
FPE/SUBGROUP: LS-6 Life Support and Protective Systems						MISSION MODE: A	
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
35	(Continued)	05	01	2.C.29	-1	Atmosphere Supply/Control Research Data Communicator	1989
		05	01	2.C.29	-2	Atmosphere Supply/Control Research Data Communicator	1989
		05	01	4.D.05	-1	Atmosphere Supply/Control Research Data Communicator	1989

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-5.0-05-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	Stop specimen unit	16	01	2.B.05	-4	Atmosphere Supply/Control System Control Deactuator	1502
		16	01	2.C.29	-1	Atmosphere Supply/Control System Control Deactuator	1502
		16	01	2.C.29	-2	Atmosphere Supply/Control System Control Deactuator	1502
15	Secure specimen unit	26	01	2.C.29	-1	Atmosphere Supply/Control System Remover	1990
		26	01	2.C.29	-2	Atmosphere Supply/Control System Remover	1990
		26	01	2.B.05	-4	Atmosphere Supply/Control System Remover	1990
		22	01	2.C.29	-1	Atmosphere Supply/Control System Translocator	1991
		22	01	2.C.29	-2	Atmosphere Supply/Control System Translocator	1991
		17	01	2.C.29	-1	Atmosphere Supply/Control System Stower	1169
		17	01	2.C.29	-2	Atmosphere Supply/Control System Stower	1169
17	Remove specimen unit	26	01	2.C.29	-1	Atmosphere Supply/Control System Remover	1990
		26	01	2.C.29	-2	Atmosphere Supply/Control System Remover	1990
		26	01	2.B.05	-4	Atmosphere Supply/Control System Remover	1990

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
						PAGE A-5.0-05-2	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-6 Life Support and Protective Systems			
EXPERIMENT:						MISSION MODE: A	
5.0 Advanced Two-Gas Atmosphere Supply and Control System						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	Package unit/samples for return	17	01	2.C.29	-1	Atmosphere Supply/Control System Stower	1169
		17	01	2.C.29	-2	Atmosphere Supply/Control System Stower	1169
		17	01	2.F.04		Atmosphere Supply/Control Sample Stower	1992

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-5.0-06-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Start specimen unit	15	01	2.B.05	-4	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.C.29	-1	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.C.29	-2	Atmosphere Supply/Control System Control Actuator	1174
11	Monitor specimen unit operation	01	01	2.B.05	-4	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.C.29	-1	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.C.29	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	3.N.05		Atmosphere Supply/Control System Operation Monitor	1129
12	Collect samples of air, gases, and contamination	29	01			(Method of sample collection unknown; crew function/task skill cannot be specified)	0000
13	Maintain test log	05	01	3.N.05		Atmosphere Supply/Control Research Data Recorder	1993
		05	01	2.C.29	-1	Atmosphere Supply/Control Research Data Recorder	1993
		05	01	2.C.29	-2	Atmosphere Supply/Control Research Data Recorder	1993
		05	01	2.B.05	-4	Atmosphere Supply/Control Research Data Recorder	1993

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-5.0-06-2
DISCIPLINE: Life Sciences			EPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	(Continued)	05	01	2.B.05	-5	Atmosphere Supply/Control	1993
		05	01	1.A.03	-8	Research Data Recorder	1993
		05	01	4.D.08		Atmosphere Supply/Control	1993
34	Make motion picture recordings	10	01	4.D.04	-9	Camera Controller	0335
		10	01	2.C.29	-1	" "	0335
		10	01	2.C.29	-2	" "	0335
		10	01	2.B.05	-4	" "	0335
35	Make audio tape recordings	10	01	4.D.05	-1	Tape Recorder Controller	0862
		05	01	3.N.05		Atmosphere Supply/Control	1989
		05	01	2.C.29	-1	Research Data Communicator	1989
		05	01	2.C.29	-2	Atmosphere Supply/Control	1989
		05	01	4.D.05	-1	Research Data Communicator	1989
46	Monitor oxygen pressures	01	01	2.B.05	-4	Atmosphere Supply/Control System	1129
		01	01	2.C.29	-1	Operation Monitor	1129
		01	01	2.C.29	-2	Atmosphere Supply/Control System	1129

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	LS-6
							PAGE	A-5.0-06-3
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 5.0 Advanced Two-Gas Atmosphere Supply and Control System							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
46	(Continued)	01	01	3.N.05		Atmosphere Supply/Control System Operation Monitor	1129	
47	Manually override automatic controls as required	04	01	2.B.05	-4	Atmosphere Supply/Control System Problem Determiner	1994	
		04	01	2.C.29	-1	Atmosphere Supply/Control System Problem Determiner	1994	
		04	01	2.C.29	-2	Atmosphere Supply/Control System Problem Determiner	1994	
		04	01	3.N.05		Atmosphere Supply/Control System Problem Determiner	1994	
		15	01	2.B.05	-4	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.C.29	-1	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.C.29	-2	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	2.B.05	-5	Atmosphere Supply/Control System Control Actuator	1174	
		15	01	1.A.03	-8	Atmosphere Supply/Control System Control Actuator	1174	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	LS-6
						PAGE	A-5.0-10-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT:						MISSION MODE:	A
5.0 Advanced Two-Gas Atmosphere Supply and Control System					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Make necessary equipment repairs as required	07	01	2.B.05	-4	Life Sciences C/D Equipment Fault Identifier	1707
		07	01	2.B.05	-5	Life Sciences C/D Equipment Fault Identifier	1707
		07	01	4.C.02		Life Sciences C/D Equipment Fault Identifier	1707
		28	01	2.B.05	-4	Life Sciences C/D Equipment Repairer	1708
		28	01	2.B.05	-5	Life Sciences C/D Equipment Repairer	1708
		07	01	4.B.09		Data Management Unit Fault Identifier	1738
		07	01	4.C.02		Data Management Unit Fault Identifier	1738
		28	01	4.B.09		Data Management Unit Repairer	1739
		07	01	2.C.29	-1	Atmosphere Supply/Control System Fault Identifier	1133
		07	01	2.C.29	-2	Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.C.29	-1	Atmosphere Supply/Control System Repairer	1132
		28	01	2.C.29	-2	Atmosphere Supply/Control System Repairer	1132

DISCIPLINE: Life Sciences

FUNCTIONAL PROGRAM ELEMENT (FPE):

LS-6 Life Support and Protective Systems

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

11.0 EVA Suit and Biopack

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-11.0-04-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Remove test suit from storage	18	01	2.C.30		EVA Suit Unstower	1996
7	Inspect suit	03 03	01 01	2.C.30 4.D.09		EVA Suit Inspector " " "	1997 1997
8	Apply sensors to self	27(30) 27(30)	01 01	2.C.28 2.A.41	-1	Biomedical Measurements Sensors Installer Biomedical Measurements Sensors Installer	2024 2024
9	Apply sensors to manikin	27 27	01 01	2.C.32 2.A.41	-1	Biomedical Measurements Sensors Installer Biomedical Measurements Sensors Installer	2024 2024
10	Don test suit	27(30) 27(30)	08 08	2.C.30 2.C.28		EVA Suit Installer " " "	1998 1998
11	Put test suit on manikin	27 27	01 01	2.C.30 2.C.32		EVA Suit Installer " " "	1998 1998
14	Connect test suit to life support services	27 27	01 01	2.C.30 2.B.05	-5	EVA Suit Umbilical Connector " " " "	1999 1999

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-11.0-04-2
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Connect test suit to data monitoring	27	01	2.C.30	-5	EVA Suit Cable Connector	2000
		27	01	2.B.05		" " " "	2000
		27	01	4.B.09		" " " "	2000
18	Remove biopack from storage	18	01	2.C.31		Biopack Unstower	2025
19	Don biopack	27 (30)	08	2.C.31		Biopack Installer	2026
		27 (30)	08	2.C.28		" "	2026
		27 (30)	08	2.C.30		" "	2026
20	Check out suit and biopack performance (self)	14 (30)	08	2.C.28	-5	EVA Suit Tester	2001
		14 (30)	08	2.C.30		" " "	2001
		14 (30)	08	2.B.05		" " "	2001
		01	01	2.B.05		" " "	2001
		14 (30)	08	2.C.28		Biopack Tester	2027
		14 (30)	08	2.C.31		" "	2027
		14 (30)	08	2.B.05		" "	2027
		01	01	2.B.05		" "	2027
21	Check out suit and biopack performance (manikin)	14	01	2.C.32	-5	EVA Suit Tester	2001
		14	01	2.C.30		" " "	2001
		14	01	2.B.05		" " "	2001
		01	01	2.B.05		" " "	2001
		14	01	2.C.32		Biopack Tester	2027
		14	01	2.C.31		" "	2027
		14	01	2.B.05		" "	2027
		01	01	2.B.05		" "	2027

SERIES LS-6

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DISCIPLINE: Life Sciences

FPE/SUBGROUP:	LS-6 Life Support and Protective Systems
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EXPERIMENT:

MISSION MODE: A

11.0 EVA Suit and Biopack

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
28	Interface with ground personnel	05	01	4.A.02	Radio Communicator	0206
		05	01	3.N.08	" "	0206
		05	01	3.N.10	" "	0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
						PAGE A-11.0-05-1	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-6 Life Support and Protective Systems			
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	Remove suit and biopack (self)	26(30)	08	2.C.30		EVA Suit Remover	2002
		26(30)	08	2.C.28		" " "	2002
		26(30)	08	2.C.31		Biopack Remover	2028
		26(30)	08	2.C.28		" "	2028
25	Remove suit and biopack from manikin	26	01	2.C.30		EVA Suit Remover	2002
		26	01	2.C.32		" " "	2002
		26	01	2.C.31		Biopack Remover	2028
		26	01	2.C.32		" "	2028

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6
						PAGE A-11.0-06-1
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems			
EXPERIMENT: 11.0 EVA Suit and Biopack					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
22	Perform tasks in suit and biopack: (Note: Task-skill determination is based on performance of a representative selection of crew functions with a hypothetical "EVA Test Assembly" similar to the "Airlock Task Board" used in Teleoperator experiments, FPE T-5)	05(30)	02	4.A.06	EVA-Vehicle Intercomm Communicator	2003
		05(30)	02	2.C.28	" " " "	2003
		08(30)	02	2.C.33	EVA Test Assembly Calibrator	2004
		08(30)	02	2.C.28	" " " "	2004
		10(30)	02	2.C.33	EVA Test Assembly Controller	2005
		10(30)	02	2.C.28	" " " "	2005
		15(30)	02	2.C.33	EVA Test Assembly Control Actuator	2006
		15(30)	02	2.C.28	" " " " "	2006
		16(30)	02	2.C.33	EVA Test Assembly Control Deactuator	2007
		16(30)	02	2.C.28	EVA Test Assembly Control Deactuator	2007
		19(30)	02	2.C.33	EVA Test Assembly Cleaner	2008
		19(30)	02	2.C.28	" " " "	2008
		19(30)	02	4.D.06	" " " "	2008
		20(30)	02	2.C.33	EVA Test Assembly Assembler	2009
		20(30)	02	2.C.28	" " " "	2009
		21(30)	02	2.C.33	EVA Test Assembly Disassembler	2010
		21(30)	02	2.C.28	" " " "	2010
		22(30)	02	2.C.33	EVA Test Assembly Translocator	2011
		22(30)	02	2.C.28	" " " "	2011
		26(30)	02	2.C.33	EVA Test Assembly Module Remover	2012
		26(30)	02	2.C.28	" " " " "	2012
		27(30)	02	2.C.33	EVA Test Assembly Module Installer	2013
		27(30)	02	2.C.28	" " " " "	2013
		25(30)	02	2.C.28	Spacecraft Exterior Translation	0061
		25(30)	02	1.A.01	" " " "	0061
		26(30)	02	2.C.33	EVA Test Assembly Remover	2014
		26(30)	02	2.C.28	" " " "	2014

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6		
							PAGE A-11.0-06-2		
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems						
EXPERIMENT: 11.0 EVA Suit and Biopack							MISSION MODE: A		
							BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT			CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
22	(Continued)	27 (30) 27 (30)	02 02	2.C.33 2.C.28		EVA Test Assembly Installer " " " "	2015 2015		
23	Monitor suit and biopack data return	01 01 01 01 01 01 01 01 01 01 01 01	01 01 01 01 01 01 01 01 01 01 01 01	2.B.05 4.B.09 2.C.28 2.A.41 2.B.05 4.B.09 2.C.30 2.A.41 2.B.05 4.B.09 2.C.31 2.A.41	-5 -1 -5 -1 -5 -1	Human Subject Status Monitor " " " " " " " " " " " " EVA Suit Operating Status Monitor " " " " " " " " " " " " Biopack Operating Status Monitor " " " " " " " " " " " "	1741 1741 1741 1741 2016 2016 2016 2016 2029 2029 2029 2029		
26	Debrief test suit/biopack test subject	05 05 05 05 05 (30) 05 (30)	01 01 01 01 01 01	3.N.08 2.C.30 2.C.28 4.D.05 3.N.08 2.C.30		EVA Suit Research Debriefing Communicator EVA Suit Research Debriefing Communicator EVA Suit Research Debriefing Communicator EVA Suit Research Debriefing Communicator EVA Suit Research Debriefing Communicator EVA Suit Research Debriefing Communicator	2017 2017 2017 2017 2017 2017		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
						PAGE A-11.0-06-3	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
26	(Continued)	05 (30)	01	2.C.28		EVA Suit Research Debriefing Communicator	2017
		05 (30)	01	4.D.05		EVA Suit Research Debriefing Communicator	2017
		05	01	3.N.10		Biopack Research Debriefing Communicator	2030
		05	01	2.C.31		Biopack Research Debriefing Communicator	2030
		05	01	2.C.28		Biopack Research Debriefing Communicator	2030
		05	01	4.D.05		Biopack Research Debriefing Communicator	2030
		05 (30)	01	3.N.10		Biopack Research Debriefing Communicator	2030
		05 (30)	01	2.C.31		Biopack Research Debriefing Communicator	2030
		05 (30)	01	2.C.28		Biopack Research Debriefing Communicator	2030
		05 (30)	01	4.D.05		Biopack Research Debriefing Communicator	2030
27	Screen data return	11	01	2.B.05	-5	EVA Suit Research Data Evaluator	2018
		11	01	2.C.30		" " " " "	2018
		11	01	4.B.09		" " " " "	2018
		11	01	2.B.05	-5	Biopack Research Data Evaluator	2031
		11	01	2.C.31		" " " "	2031
		11	01	4.B.09		" " " "	2031

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-11.0-06-4
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
28	Interface with ground personnel	05	01	4.A.02		Radio Communicator	0206
		05	01	3.N.08		" "	0206
		05	01	3.N.10		" "	0206
33	Access/egress through airlock	01	01	1.A.02	-1	Airlock Status Monitor	0009
		26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
		25(30)	08	1.A.10		Spacecraft Airlock Translationer	0142
		25(30)	08	2.C.28		" " "	0142
		25(30)	08	2.C.30		" " "	0142
		25(30)	08	2.C.31		" " "	0142
		27	01	1.A.01	-3	Airlock Inside Hatch Closer	0031
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
		15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033
		25(30)	02	1.A.10		Spacecraft Airlock Translationer	0142
		25(30)	02	2.C.28		" " "	0142
		25(30)	02	2.C.30		" " "	0142
		25(30)	02	2.C.31		" " "	0142
		25(30)	02	5.H		" " "	0142
34	Make motion picture recording	10	01	4.D.04	-9	Camera Controller	0335
		10	01	3.N.08		" "	0335
		10	01	3.N.10		" "	0335
		10	01	1.A.01	-14	" "	0335

FLIGHT EXPERIMENT TASK-SKILLS							SERIES LS-6
							PAGE A-11.0-06-5
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
51	Retrieve crewman to airlock	15	01	2.B.05	-5	Tether/Control Unit Control Actuator	2039
		15	01	4.E.11		Tether/Control Unit Control Actuator	2039
		15	01	2.C.28		Tether/Control Unit Control Actuator	2039
52	Rapidly pressurize airlock	01	01	1.A.02	-1	Airlock Status Monitor	0009
		15	01	1.A.02	-2	Airlock Pressurization Actuator	0133
		15	01	2.C.28		" " "	0133

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
						PAGE A-11.0-09-1	
DISCIPLINE: Life Sciences				FPE/SUBGROUP: LS-6 Life Support and Protective Systems			
EXPERIMENT: 11.0 EVA Suit and Biopack				MISSION MODE: A			
				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
29	Service suit assemblies and biopacks as required	19	01	2.C.30	EVA Suit Cleaner	2019	
		19	01	4.D.06	" " "	2019	
		26	01	2.C.30	EVA Suit Module Remover	2020	
		27	01	2.C.30	EVA Suit Module Installer	2021	
		19	01	2.C.31	Biopack Cleaner	2032	
		19	01	4.D.06	" "	2032	
		20	01	2.C.31	Biopack Disassembler	2033	
		21	01	2.C.31	Biopack Assembler	2034	
		26	01	2.C.31	Biopack Module Remover	2035	
		27	01	2.C.31	Biopack Module Installer	2036	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES LS-6	
						PAGE A-11.0-10-1	
DISCIPLINE: Life Sciences			FPE/SUBGROUP: LS-6 Life Support and Protective Systems				
EXPERIMENT: 11.0 EVA Suit and Biopack						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
29	Service suit assemblies and biopack as required	19	01	2.C.30	EVA Suit Cleaner	2019	
		19	01	4.D.06	" " "	2019	
		26	01	2.C.30	EVA Suit Module Remover	2020	
		27	01	2.C.30	EVA Suit Module Installer	2021	
		19	01	2.C.31	Biopack Cleaner	2032	
		19	01	4.D.06	" "	2032	
		20	01	2.C.31	Biopack Disassembler	2033	
		21	01	2.C.31	Biopack Assembler	2034	
		26	01	2.C.31	Biopack Module Remover	2035	
		27	01	2.C.31	Biopack Module Installer	2036	
		07	01	2.C.30	EVA Suit Fault Identifier	2022	
		07	01	4.C.02	" " " "	2022	
		28	01	2.C.30	EVA Suit Repairer	2023	
		07	01	2.C.31	Biopack Fault Identifier	2037	
		07	01	4.C.02	" " "	2037	
		28	01	2.C.31	Biopack Repairer	2038	

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

1.0 Metallurgical Processes

1.1 Composite Materials

1.2 Metal Foams and Controlled-Density Materials

1.3 Free Casting of Metals

1.4 Liquid Dispersions

2.0 Crystal Growth

2.1 Crystal Growth from Solution

2.2 Single Crystal Growth from Melts

2.3 Crystal Growth from Vapor

2.4 Supercooling and Homogeneous Nucleation

3.0 Glass Processes

3.1 Preparation of Glasses

3.2 Glass Processing

4.0 Biological Processing

4.1 Electrophoretic Separation

4.2 Lyophilization

5.0 Physical Properties of Fluids

5.1 Convection

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Metallurgical Processes

1.1 Composite Materials

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	Define experiment apparatus configurations	13	01	2.A.04	Composite Materials Research Planner	0968
		13	01	2.A.18	Composite Materials Research Planner	0968
		13	01	2.C.14 -1	Composite Materials Research Planner	0968
		13	01	2.C.14 -2	Composite Materials Research Planner	0968
		13	01	2.C.14 -3	Composite Materials Research Planner	0968
		13	01	2.C.14 -4	Composite Materials Research Planner	0968
		13	01	2.C.14 -5	Composite Materials Research Planner	0968
		13	01	2.B.06	Composite Materials Research Planner	0968
		13	01	2.D.13 -1	Composite Materials Research Planner	0968
		13	01	2.D.13 -2	Composite Materials Research Planner	0968
		13	01	2.D.13 -3	Composite Materials Research Planner	0968
		13	01	2.D.14	Composite Materials Research Planner	0968
		13	01	2.D.15	Composite Materials Research Planner	0968
		13	01	3.I.04 -1	Composite Materials Research Planner	0968
		13	01	3.I.04 -2	Composite Materials Research Planner	0968

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-04-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	13	01	3.I.04	-3	Composite Materials Research Planner	0968
		13	01	3.I.04	-4	Composite Materials Research Planner	0968
		13	01	3.I.04	-5	Composite Materials Research Planner	0968
		13	01	3.I.04	-6	Composite Materials Research Planner	0968
		13	01	4.D.13		Composite Materials Research Planner	0968
		13	01	2.D.24	-1	Composite Materials Research Planner	0968
		13	01	2.D.12		Composite Materials Research Planner	0968
		13	01	2.D.18		Composite Materials Research Planner	0968
		13	01	2.D.19		Composite Materials Research Planner	0968
		13	01	2.D.20		Composite Materials Research Planner	0968
		13	01	2.D.21		Composite Materials Research Planner	0968
		13	01	2.D.22		Composite Materials Research Planner	0968
		13	01	2.D.23		Composite Materials Research Planner	0968
		13	01	4.D.14		Composite Materials Research Planner	0968
		13	01	4.D.06		Composite Materials Research Planner	0968

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials			MISSION MODE: A				
					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	13	01	4.D.15		Composite Materials Research Planner	0968
2	Set up heating equipment	23	01	2.D.24	-1	Furnace Deployer	0979
3	Set up mixing equipment	23	01	2.D.21	-1	Mixing Unit Deployer	0990
		23	01	2.D.21	-2	" " "	0990
4	Set up casting equipment	23	01	2.D.17		Mold Injection System Deployer	1004
		23	01	2.D.19		Materials Forming Equipment Deployer	1015
		23	01	2.D.14		Liquid Metal Supply System Deployer	1022
5	Set up supporting instrumentation	23	01	2.B.06	-2	Materials Science C/D Equipment Deployer	1033
6	Emplace material samples	27	01	2.C.14	-1	Composite Materials Sample Installer	0974
		27	01	2.C.14	-2	Composite Materials Sample Installer	0974
		27	01	2.C.14	-3	Composite Materials Sample Installer	0974
		27	01	2.C.14	-4	Composite Materials Sample Installer	0974

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.1-04-4		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:						MISSION MODE: A			
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE		NO.		
6	(Continued)	27	01	2.C.14	-5	Composite Materials Sample Installer		0974	
		27	01	2.D.24	-1	Composite Materials Sample Installer		0974	
		27	01	2.D.14		Composite Materials Sample Installer		0974	
		27	01	2.D.20		Composite Materials Sample Installer		0974	
		27	01	3.I.04	-1	Composite Materials Sample Installer		0974	
		27	01	3.I.04	-2	Composite Materials Sample Installer		0974	
		27	01	3.I.04	-3	Composite Materials Sample Installer		0974	
		27	01	3.I.04	-4	Composite Materials Sample Installer		0974	
		27	01	3.I.04	-5	Composite Materials Sample Installer		0974	
		27	01	3.I.04	-6	Composite Materials Sample Installer		0974	
7	Program experiment control equipment	13	01	2.B.06	-1	Computer Program Determiner		0609	
		13	01	2.C.14	-1	"	"	"	0609
		13	01	2.C.14	-2	"	"	"	0609
		13	01	2.C.14	-3	"	"	"	0609
		13	01	2.C.14	-4	"	"	"	0609
		13	01	2.C.14	-5	"	"	"	0609
		13	01	3.I.04	-1	"	"	"	0609
		13	01	3.I.04	-2	"	"	"	0609
		13	01	3.I.04	-3	"	"	"	0609

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	13	01	3.I.04	-4	Computer Program Determiner	0609
		13	01	3.I.04	-5	" " "	0609
		13	01	3.I.04	-6	" " "	0609
		15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.04	-1	" " "	0847
		15	01	3.I.04	-2	" " "	0847
		15	01	3.I.04	-3	" " "	0847
		15	01	3.I.04	-4	" " "	0847
		15	01	3.I.04	-5	" " "	0847
		15	01	3.I.04	-6	" " "	0847
		15	01	2.C.14	-1	" " "	0847
		15	01	2.C.14	-2	" " "	0847
		15	01	2.C.14	-3	" " "	0847
		15	01	2.C.14	-4	" " "	0847
		15	01	2.C.14	-5	" " "	0847
17	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.04		" "	0206
31	Set up experiment apparatus	18	01	2.C.14	-1	Composite Materials Sample Unstower	0975
		18	01	2.C.14	-2	Composite Materials Sample Unstower	0975
		18	01	2.C.14	-3	Composite Materials Sample Unstower	0975
		18	01	2.C.14	-4	Composite Materials Sample Unstower	0975
		18	01	2.C.14	-5	Composite Materials Sample Unstower	0975

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-04-6
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials		MISSION MODE: A				
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
22	Set up experiment apparatus	22	01	2.C.14	-1	Composite Materials Sample Translocator 0976
		22	01	2.C.14	-2	Composite Materials Sample Translocator 0976
		22	01	2.C.14	-3	Composite Materials Sample Translocator 0976
		22	01	2.C.14	-4	Composite Materials Sample Translocator 0976
		22	01	2.C.14	-5	Composite Materials Sample Translocator 0976
		18	01	2.D.13	-1	Environmental Chamber Unstower 1058
		18	01	2.D.13	-2	" " " 1058
		18	01	2.D.13	-3	" " " 1058
		18	01	2.D.14		Liquid Metal Supply System Unstower 1023
		18	01	2.D.24	-1	Furnace Unstower 0980
		18	01	2.D.17		Mold Injection System Unstower 1005
		18	01	2.D.18		Dispersion Control System Unstower 1105
		18	01	2.D.19	-1	Materials Forming Equipment Unstower 1017
		18	01	2.D.19	-2	Materials Forming Equipment Unstower 1017
		18	01	2.D.19	-3	Materials Forming Equipment Unstower 1017
		22	01	2.D.19	-1	Materials Forming Equipment Translocator 1018
		22	01	2.D.19	-2	Materials Forming Equipment Translocator 1018
		22	01	2.D.19	-3	Materials Forming Equipment Translocator 1018

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.1-04-7

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials MISSION MODE: A

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	27	01	2.D.19	-1	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-2	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-3	Materials Forming Equipment Installer	1016
		18	01	2.D.20		Internal Attachments Unstower	1152
		22	01	2.D.20		Internal Attachments Translocator	1153
		27	01	2.D.20		Internal Attachments Installer	1151
		18	01	2.D.53		Chill System Unstower	1068
		22	01	2.D.53		Chill System Translocator	1069
		27	01	2.D.53		Chill System Installer	1067
		18	01	2.D.21	-1	Mixing Unit Unstower	0992
		18	01	2.D.21	-2	" " "	0992
		22	01	2.D.21	-1	Mixing Unit Translocator	0993
		22	01	2.D.21	-2	" " "	0993
		27	01	2.D.21	-1	Mixing Unit Installer	0991
		27	01	2.D.21	-2	" " "	0991
		18	01	2.D.50		Slip Cast Injection System Unstower	1116
		22	01	2.D.50		Slip Cast Injection System Translocator	1117
		27	01	2.D.50		Slip Cast Injection System Installer	1115
		18	01	2.D.22		Vibrator Unstower	1080
		22	01	2.D.22		Vibrator Translocator	1081
		27	01	2.D.22		Vibrator Installer	1079
		18	01	2.D.52		VHF Power Unit Unstower	1092
		22	01	2.D.52		VHF Power Unit Translocator	1093
		27	01	2.D.52		VHF Power Unit Installer	1091
		18	01	2.B.06	-1	Computer Unstower	1054

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-04-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
31	(Continued)	18	01	4.D.14		Heat Rejection System Unstower	1142
		18	01	2.D.27		Materials Analysis Equipment Unstower	1041
		22	01	2.D.27		Materials Analysis Equipment Translocator	1042
		27	01	2.D.27		Materials Analysis Equipment Installer	1040
32	Reconfigure experiments	15	01	2.F.06	-1	Computer Control Actuator	0847
		15	01	3.I.04	-1	" " "	0847
		15	01	3.I.04	-2	" " "	0847
		15	01	3.I.04	-3	" " "	0847
		15	01	3.I.04	-4	" " "	0847
		15	01	3.I.04	-5	" " "	0847
		15	01	3.I.04	-6	" " "	0847
		15	01	2.C.14	-1	" " "	0847
		15	01	2.C.14	-2	" " "	0847
		15	01	2.C.14	-3	" " "	0847
		15	01	2.C.14	-4	" " "	0847
		15	01	2.C.14	-5	" " "	0847
		26	01	2.C.14	-1	Composite Materials Sample Remover	0977
		26	01	2.C.14	-2	Composite Materials Sample Remover	0977
		26	01	2.C.14	-3	Composite Materials Sample Remover	0977
		26	01	2.C.14	-4	Composite Materials Sample Remover	0977
		26	01	2.C.14	-5	Composite Materials Sample Remover	0977

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-04-9	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:		MISSION MODE: A					
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	26	01	2.D.24	-1	Composite Materials Sample Remover	0977
		26	01	2.D.14		Composite Materials Sample Remover	0977
		26	01	2.D.20		Composite Materials Sample Remover	0977
		27	01	2.C.14	-1	Composite Materials Sample Installer	0974
		27	01	2.C.14	-2	Composite Materials Sample Installer	0974
		27	01	2.C.14	-3	Composite Materials Sample Installer	0974
		27	01	2.C.14	-4	Composite Materials Sample Installer	0974
		27	01	2.C.14	-5	Composite Materials Sample Installer	0974
		27	01	2.D.24	-1	Composite Materials Sample Installer	0974
		27	01	2.D.14		Composite Materials Sample Installer	0974
		27	01	2.D.20		Composite Materials Sample Installer	0974
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-04-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
32	(Continued)	27	01	2.D.13	-1	Environmental Chamber Module Installer 1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer 1060
		26	01	2.D.14		Liquid Metal Supply System Module Remover 1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer 1024
		26	01	2.D.24	-1	Furnace Module Remover 0981
		27	01	2.D.24	-1	Furnace Module Installer 0982
		26	01	2.D.17		Mold Injection System Module Remover 1006
		27	01	2.D.17		Mold Injection System Module Installer 1007
		26	01	2.D.18		Dispersion Control System Module Remover 1106
		27	01	2.D.18		Dispersion Control System Module Installer 1108
		26	01	2.D.19	-1	Materials Forming Equipment Remover 1019
		26	01	2.D.19	-2	Materials Forming Equipment Remover 1019
		26	01	2.D.19	-3	Materials Forming Equipment Remover 1019
		27	01	2.D.19	-1	Materials Forming Equipment Installer 1016
		27	01	2.D.19	-2	Materials Forming Equipment Installer 1016
		27	01	2.D.19	-3	Materials Forming Equipment Installer 1016

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-04-11
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	2.D.20	Internal Attachments Remover	1154
		27	01	2.D.20	Internal Attachments Installer	1151
		26	01	2.D.53	Chill System Remover	1070
		27	01	2.D.53	Chill System Installer	1067
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		26	01	2.D.21	Mixing Unit Remover	0994
		26	01	2.D.21	" " "	0994
		26	01	2.D.21	Mixing Unit Module Remover	0995
		26	01	2.D.21	" " " "	0995
		27	01	2.D.21	Mixing Unit Installer	0991
		27	01	2.D.21	" " "	0991
		27	01	2.D.21	Mixing Unit Module Installer	0996
		27	01	2.D.21	" " " "	0996
		26	01	2.D.50	Slip Cast Injection System Remover	1118
		26	01	2.D.50	Slip Cast Injection System Module Remover	1119
		27	01	2.D.50	Slip Cast Injection System Installer	1115
		27	01	2.D.50	Slip Cast Injection System Module Installer	1120
		26	01	2.D.22	Vibrator Remover	1082
		26	01	2.D.22	Vibrator Module Remover	1083
		27	01	2.D.22	Vibrator Module Installer	1084
		27	01	2.D.22	Vibrator Installer	1079
		26	01	2.D.52	VHF Power Unit Remover	1094
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Installer	1091
		27	01	2.D.52	VHF Power Unit Module Installer	1096

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-04-12	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
35	Calibrate instruments	08	01	2.D.52		VHF Power Unit Calibrator	1097
		08	01	4.C.01		" " " "	1097
		08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
DISCIPLINE: Materials Science & Mfg.				PAGE A-1.1-05-1			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials				MISSION MODE: A			
BASIC FUNCTION: 05 Experiment Shutdown							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
9	Remove samples from apparatus	26	01	2.C.14	-1	Composite Materials Sample Remover	0977
		26	01	2.C.14	-2	Composite Materials Sample Remover	0977
		26	01	2.C.14	-3	Composite Materials Sample Remover	0977
		26	01	2.C.14	-4	Composite Materials Sample Remover	0977
		26	01	2.C.14	-5	Composite Materials Sample Remover	0977
		26	01	2.D.24	-1	Composite Materials Sample Remover	0977
		26	01	2.D.14		Composite Materials Sample Remover	0977
		26	01	2.D.20		Composite Materials Sample Remover	0977
11	Secure experiment apparatus	16	01	2.B.06	-1	Computer Control Deactuator	0319
		17	01	2.B.06	-1	Computer Stower	1160
		26	01	2.C.14	-1	Composite Materials Sample Remover	0977
		26	01	2.C.14	-2	Composite Materials Sample Remover	0977
		26	01	2.C.14	-3	Composite Materials Sample Remover	0977
		26	01	2.C.14	-4	Composite Materials Sample Remover	0977
		26	01	2.C.14	-5	Composite Materials Sample Remover	0977

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1		
						PAGE A-1.1-05-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
11	(Continued)	22	01	2.C.14	-1	Composite Materials Sample Translocator	0976	
		22	01	2.C.14	-2	Composite Materials Sample Translocator	0976	
		22	01	2.C.14	-3	Composite Materials Sample Translocator	0976	
		22	01	2.C.14	-4	Composite Materials Sample Translocator	0976	
		22	01	2.C.14	-5	Composite Materials Sample Translocator	0976	
		17	01	2.C.14	-1	Composite Materials Sample Stower	0978	
		17	01	2.C.14	-2	" " " "	0978	
		17	01	2.C.14	-3	" " " "	0978	
		17	01	2.C.14	-4	" " " "	0978	
		17	01	2.C.14	-5	" " " "	0978	
		17	01	2.D.13	-1	Environmental Chamber Stower	1061	
		17	01	2.D.13	-2	" " " "	1061	
		17	01	2.D.13	-3	" " " "	1061	
		17	01	2.D.14		Liquid Metal Supply System Stower	1026	
		17	01	2.D.24	-1	Furnace Stower	0983	
		17	01	2.D.17		Mold Injection System Stower	1008	
		17	01	2.D.18		Dispersion Control System Stower	1107	
		26	01	2.D.19	-1	Materials Forming Equipment Remover	1019	
		26	01	2.D.19	-2	Materials Forming Equipment Remover	1019	
		26	01	2.D.19	-3	Materials Forming Equipment Remover	1019	
		22	01	2.D.19	-1	Materials Forming Equipment Translocator	1018	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-05-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
11	(Continued)	22	01	2.D.19	-2	Materials Forming Equipment Translocator 1018
		22	01	2.D.19	-3	Materials Forming Equipment Translocator 1018
		17	01	2.D.19	-1	Materials Forming Equipment Stower 1020
		17	01	2.D.19	-2	Materials Forming Equipment Stower 1020
		17	01	2.D.19	-3	Materials Forming Equipment Stower 1020
		26	01	2.D.20		Internal Attachments Remover 1154
		22	01	2.D.20		Internal Attachments Translocator 1153
		17	01	2.D.20		Internal Attachments Stower 1155
		26	01	2.D.53		Chill System Remover 1070
		22	01	2.D.53		Chill System Translocator 1069
		17	01	2.D.53		Chill System Stower 1073
		26	01	2.D.21	-1	Mixing Unit Remover 0994
		26	01	2.D.21	-2	" " " 0994
		22	01	2.D.21	-1	Mixing Unit Translocator 0993
		22	01	2.D.21	-2	" " " 0993
		17	01	2.D.21	-1	Mixing Unit Stower 0997
		17	01	2.D.21	-2	" " " 0997
		26	01	2.D.50		Slip Cast Injection System Remover 1118
		22	01	2.D.50		Slip Cast Injection System Translocator 1117
		17	01	2.D.50		Slip Cast Injection System Stower 1121
		26	01	2.D.22		Vibrator Remover 1082
		22	01	2.D.22		Vibrator Translocator 1081
		17	01	2.D.22		Vibrator Stower 1085

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1	
							PAGE A-1.1-05-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
11	(Continued)	26	01	2.D.52		VHF Power Unit Remover	1094	
		22	01	2.D.52		VHF Power Unit Translocator	1093	
		17	01	2.D.52		VHF Power Unit Stower	1098	
		17	01	4.D.14		Heat Rejection System Stower	1145	
		26	01	2.D.27		Materials Analysis Equipment Remover	1043	
		22	01	2.D.27		Materials Analysis Equipment Translocator	1042	
		17	01	2.D.27		Materials Analysis Equipment Stower	1047	
15	Prepare experiment notes	06	01	2.F.02		Composite Materials Data Recorder	0969	
		06	01	3.I.04	-1	" " " "	0969	
		06	01	3.I.04	-2	" " " "	0969	
		06	01	3.I.04	-3	" " " "	0969	
		06	01	3.I.04	-4	" " " "	0969	
		06	01	3.I.04	-5	" " " "	0969	
		06	01	3.I.04	-6	" " " "	0969	
		06	01	2.C.14	-1	" " " "	0969	
		06	01	2.C.14	-2	" " " "	0969	
		06	01	2.C.14	-3	" " " "	0969	
		06	01	2.C.14	-4	" " " "	0969	
		06	01	2.C.14	-5	" " " "	0969	
17	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206	
		05	01	3.I.04		" "	0206	
		05	01	2.C.14		" "	0206	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-05-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.C.14	-1	" " "	1062
		19	01	2.C.14	-2	" " "	1062
		19	01	2.C.14	-3	" " "	1062
		19	01	2.C.14	-4	" " "	1062
		19	01	2.C.14	-5	" " "	1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-1	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-2	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-3	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-4	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-5	Liquid Metal Supply System Cleaner	1027
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	2.C.14	-1	" "	0984
		19	01	2.C.14	-2	" "	0984
		19	01	2.C.14	-3	" "	0984
		19	01	2.C.14	-4	" "	0984
		19	01	2.C.14	-5	" "	0984
		19	01	2.D.17		Mold Injection System Cleaner	1009
		19	01	2.C.14	-1	" " " "	1009
		19	01	2.C.14	-2	" " " "	1009
		19	01	2.C.14	-3	" " " "	1009

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-05-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.C.14	-4	Mold Injection System Cleaner	1009
		19	01	2.C.14	-5	" " " "	1009
		19	01	2.D.18		Dispersion Control System Cleaner	1109
		19	01	2.C.14	-1	" " " "	1109
		19	01	2.C.14	-2	" " " "	1109
		19	01	2.C.14	-3	" " " "	1109
		19	01	2.C.14	-4	" " " "	1109
		19	01	2.C.14	-5	" " " "	1109
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner	1021
		19	01	2.C.14	-1	Materials Forming Equipment Cleaner	1021
		19	01	2.C.14	-2	Materials Forming Equipment Cleaner	1021
		19	01	2.C.14	-3	Materials Forming Equipment Cleaner	1021
		19	01	2.C.14	-4	Materials Forming Equipment Cleaner	1021
		19	01	2.C.14	-5	Materials Forming Equipment Cleaner	1021
		19	01	2.D.21	-1	Mixing Unit Cleaner	0998
		19	01	2.D.21	-2	" " " "	0998
		19	01	2.C.14	-1	" " " "	0998
		19	01	2.C.14	-2	" " " "	0998
		19	01	2.C.14	-3	" " " "	0998
		19	01	2.C.14	-4	" " " "	0998
		19	01	2.C.14	-5	" " " "	0998

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-05-7
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	4.D.06		Mixing Unit Cleaner	0998
		19	01	4.D.06		Environmental Chamber Cleaner	1062
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	4.D.06		Furnace Cleaner	0984
		19	01	4.D.06		Mold Injection System Cleaner	1009
		19	01	4.D.06		Dispersion Control System Cleaner	1109
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	2.C.14	-1	Materials Analysis Equipment Cleaner	1048
		19	01	2.C.14	-2	Materials Analysis Equipment Cleaner	1048
		19	01	2.C.14	-3	Materials Analysis Equipment Cleaner	1048
		19	01	2.C.14	-4	Materials Analysis Equipment Cleaner	1048
		19	01	2.C.14	-5	Materials Analysis Equipment Cleaner	1048
41	Communicate experiment results to earth	05	01	3.I.04	-1	Radio Communicator	0206
		05	01	3.I.04	-2	" "	0206
		05	01	3.I.04	-3	" "	0206
		05	01	3.I.04	-4	" "	0206
		05	01	3.I.04	-5	" "	0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-05-8	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials				MISSION MODE: A			
				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
41	(Continued)	05	01	3.I.04	-6	Radio Communicator	0206
		05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-06-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Monitor experiment control equipment	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Liquid Metal Supply System Operation Monitor	1028
		01	01	2.D.14		Liquid Metal Supply System Operation Monitor	1028
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.B.06	-2	Mold Injection System Operation Monitor	1010
		01	01	2.D.17		Mold Injection System Operation Monitor	1010
		01	01	2.B.06	-2	Dispersion Control System Operation Monitor	1110
		01	01	2.D.18		Dispersion Control System Operation Monitor	1110

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNC NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
8	(Continued)	01	01	2.B.06	-2	Chill System Operation Monitor 1074
		01	01	2.D.53		" " " " 1074
		01	01	2.B.06	-2	Mixing Unit Operation Monitor 0999
		01	01	2.D.21	-1	" " " " 0999
		01	01	2.D.21	-2	" " " " 0999
		01	01	2.B.06	-2	Slip Cast Injection System 1122
						Operation Monitor
		01	01	2.D.50		Slip Cast Injection System 1122
						Operation Monitor
		01	01	2.B.06	-2	Vibrator Operation Monitor 1086
		01	01	2.D.22		" " " " 1086
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor 1099
		01	01	2.D.52		" " " " 1099
		01	01	2.B.06	-2	Computer Unit Operation Monitor 1055
		01	01	2.B.06	-1	" " " " 1055
		01	01	2.B.06	-2	Heat Rejection System Operation 1146
						Monitor
		01	01	4.D.14		Heat Rejection System Operation 1146
						Monitor
12	Perform metallographic examinations	04	01	3.I.04	-1	Composite Materials Structure 0970
						Determiner
		04	01	3.I.04	-2	Composite Materials Structure 0970
						Determiner
		04	01	3.I.04	-3	Composite Materials Structure 0970
						Determiner
		04	01	3.I.04	-4	Composite Materials Structure 0970
						Determiner
		04	01	3.I.04	-5	Composite Materials Structure 0970
						Determiner

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-06-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	(Continued)	04	01	3.I.04	-6	Composite Materials Structure Determiner	0970
		04	01	2.C.14	-1	Composite Materials Structure Determiner	0970
		04	01	2.C.14	-2	Composite Materials Structure Determiner	0970
		04	01	2.C.14	-3	Composite Materials Structure Determiner	0970
		04	01	2.C.14	-4	Composite Materials Structure Determiner	0970
		04	01	2.C.14	-5	Composite Materials Structure Determiner	0970
		04	01	2.D.27		Composite Materials Structure Determiner	0970
13	Perform sample evaluation tests	12	01	3.I.04	-1	Composite Materials Structure Analyzer	0971
		12	01	3.I.04	-2	Composite Materials Structure Analyzer	0971
		12	01	3.I.04	-3	Composite Materials Structure Analyzer	0971
		12	01	3.I.04	-4	Composite Materials Structure Analyzer	0971
		12	01	3.I.04	-5	Composite Materials Structure Analyzer	0971
		12	01	3.I.04	-6	Composite Materials Structure Analyzer	0971
		12	01	2.C.14	-1	Composite Materials Structure Analyzer	0971

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	(Continued)	12	01	2.C.14	-2	Composite Materials Structure Analyzer	0971
		12	01	2.C.14	-3	Composite Materials Structure Analyzer	0971
		12	01	2.C.14	-4	Composite Materials Structure Analyzer	0971
		12	01	2.C.14	-5	Composite Materials Structure Analyzer	0971
		12	01	2.D.27		Composite Materials Structure Analyzer	0971
14	Determine need for repetitions and changes	13	01	2.B.06	-1	Composite Materials Research Planner	0968
		13	01	2.C.14	-1	Composite Materials Research Planner	0968
		13	01	2.C.14	-2	Composite Materials Research Planner	0968
		13	01	2.C.14	-3	Composite Materials Research Planner	0968
		13	01	2.C.14	-4	Composite Materials Research Planner	0968
		13	01	2.C.14	-5	Composite Materials Research Planner	0968
		13	01	3.I.04	-1	Composite Materials Research Planner	0968
		13	01	3.I.04	-2	Composite Materials Research Planner	0968
		13	01	3.I.04	-3	Composite Materials Research Planner	0968

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	(Continued)	13	01	3.I.04	-4	Composite Materials Research Planner	0968
		13	01	3.I.04	-6	Composite Materials Research Planner	0968
		13	01	2.B.06	-2	Composite Materials Research Planner	0968
15	Prepare experiment notes	02	01	2.B.06		Composite Materials Processing Observer	0972
		02	01	2.C.14	-1	Composite Materials Processing Observer	0972
		02	01	2.C.14	-2	Composite Materials Processing Observer	0972
		02	01	2.C.14	-3	Composite Materials Processing Observer	0972
		02	01	2.C.14	-4	Composite Materials Processing Observer	0972
		02	01	2.C.14	-5	Composite Materials Processing Observer	0972
		02	01	2.F.02		Composite Materials Processing Observer	0972
		02	01	3.I.04	-1	Composite Materials Processing Observer	0972
		02	01	3.I.04	-2	Composite Materials Processing Observer	0972
		02	01	3.I.04	-3	Composite Materials Processing Observer	0972
		02	01	3.I.04	-4	Composite Materials Processing Observer	0972

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-06-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	(Continued)	02	01	3.I.04	-5	Composite Materials Processing Observer	0972
		02	01	3.I.04	-6	Composite Materials Processing Observer	0972
		06	01	2.C.14	-1	Composite Materials Data Recorder	0969
		06	01	2.C.14	-2	" " " "	0969
		06	01	2.C.14	-3	" " " "	0969
		06	01	2.C.14	-4	" " " "	0969
		06	01	2.C.14	-5	" " " "	0969
		06	01	2.F.02		" " " "	0969
		06	01	3.I.04	-1	" " " "	0969
		06	01	3.I.04	-2	" " " "	0969
		06	01	3.I.04	-3	" " " "	0969
		06	01	3.I.04	-4	" " " "	0969
		06	01	3.I.04	-5	" " " "	0969
		06	01	3.I.04	-6	" " " "	0969
16	Photograph metallographic sections	15	01	4.D.04		Camera Control Actuator	0245
		15	01	2.A.18		" " "	0245
		15	01	2.C.14	-1	" " "	0245
		15	01	2.C.14	-2	" " "	0245
		15	01	2.C.14	-3	" " "	0245
		15	01	2.C.14	-4	" " "	0245
		15	01	2.C.14	-5	" " "	0245
17	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.04		" "	0206
		05	01	2.C.14		" "	0206

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-7
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials		BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	Enlarge portions of metallographic photographs	10	01	2.A.27		Photograph Enlarger Controller	1158
		10	01	4.B.08		" " "	1158
19	TV transmit enlarged photos	10	01	2.F.01		Telemetry Equipment Controller	1104
		10	01	4.A.01		" " "	1104
20	Prepare metallographic sections	10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-1	Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-2	Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-3	Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-4	Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-5	Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-6	Materials Analysis Equipment Controller	1049
		10	01	2.C.14	-1	Materials Analysis Equipment Controller	1049
		10	01	2.C.14	-2	Materials Analysis Equipment Controller	1049
		10	01	2.C.14	-3	Materials Analysis Equipment Controller	1049
		10	01	2.C.14	-4	Materials Analysis Equipment Controller	1049

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
20	(Continued)	10	01	2.C.14	-5	Materials Analysis Equipment Controller	1049
36	Schedule experiment runs	13	01	2.B.06	-1	Composite Materials Research Planner	0968
		13	01	2.B.06	-2	Composite Materials Research Planner	0968
		13	01	3.I.04	-1	Composite Materials Research Planner	0968
		13	01	3.I.04	-2	Composite Materials Research Planner	0968
		13	01	3.I.04	-3	Composite Materials Research Planner	0968
		13	01	3.I.04	-4	Composite Materials Research Planner	0968
		13	01	3.I.04	-5	Composite Materials Research Planner	0968
		13	01	3.I.04	-6	Composite Materials Research Planner	0968
38	Define experiment conditions	13	01	2.D.14	-1	Composite Materials Research Planner	0968
		13	01	4.D.13		Composite Materials Research Planner	0968
		13	01	2.D.24		Composite Materials Research Planner	0968
		13	01	2.D.17		Composite Materials Research Planner	0968

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-06-9	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials				MISSION MODE: A			
				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	2.D.19		Composite Materials Research Planner	0968
		13	01	2.D.20		Composite Materials Research Planner	0968
		13	01	2.D.53		Composite Materials Research Planner	0968
		13	01	2.D.21		Composite Materials Research Planner	0968
		13	01	2.D.50		Composite Materials Research Planner	0968
		13	01	2.D.22		Composite Materials Research Planner	0968
		13	01	2.D.52		Composite Materials Research Planner	0968
		13	01	4.D.14		Composite Materials Research Planner	0968
		13	01	2.C.14	-1	Composite Materials Research Planner	0968
		13	01	2.C.14	-2	Composite Materials Research Planner	0968
		13	01	2.C.14	-3	Composite Materials Research Planner	0968
		13	01	2.C.14	-4	Composite Materials Research Planner	0968
		13	01	2.C.14	-5	Composite Materials Research Planner	0968
		13	01	2.D.13	-1	Composite Materials Research Planner	0968
		13	01	2.D.13	-2	Composite Materials Research Planner	0968

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	2.D.13	-3	Composite Materials Research Planner	0968
		13	01	2.D.15		Composite Materials Research Planner	0968
		13	01	2.D.18		Composite Materials Research Planner	0968
		13	01	2.B.06	-1	Composite Materials Research Planner	0968
		13	01	2.B.06	-2	Composite Materials Research Planner	0968
		13	01	3.I.04	-1	Composite Materials Research Planner	0968
		13	01	3.I.04	-2	Composite Materials Research Planner	0968
		13	01	3.I.04	-3	Composite Materials Research Planner	0968
		13	01	3.I.04	-4	Composite Materials Research Planner	0968
		13	01	3.I.04	-5	Composite Materials Research Planner	0968
		13	01	3.I.04	-6	Composite Materials Research Planner	0968
40	Evaluate experiment results	11	01	3.I.04	-1	Composite Materials Research Evaluator	0973
		11	01	3.I.04	-2	Composite Materials Research Evaluator	0973
		11	01	3.I.04	-3	Composite Materials Research Evaluator	0973

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.1-06-11
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
40	(Continued)	11	01	3.I.04	-4	Composite Materials Research Evaluator	0973
		11	01	3.I.04	-5	Composite Materials Research Evaluator	0973
		11	01	3.I.04	-6	Composite Materials Research Evaluator	0973
		11	01	2.C.14	-1	Composite Materials Research Evaluator	0973
		11	01	2.C.14	-2	Composite Materials Research Evaluator	0973
		11	01	2.C.14	-3	Composite Materials Research Evaluator	0973
		11	01	2.C.14	-4	Composite Materials Research Evaluator	0973
		11	01	2.C.14	-5	Composite Materials Research Evaluator	0973
47	Operate measuring, recording, transmission systems and equipment	10	01	4.A.02		Radio Communicator	0206
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	Conduct voice conferences with ground	05 05	01 01	4.A.02 3.I.04		Radio Communicator " "	0206 0206
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.C.14	-1	" " "	1062
		19	01	2.C.14	-2	" " "	1062
		19	01	2.C.14	-3	" " "	1062
		19	01	2.C.14	-4	" " "	1062
		19	01	2.C.14	-5	" " "	1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-1	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-2	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-3	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-4	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-5	Liquid Metal Supply System Cleaner	1027
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	2.C.14	-1	" "	0984
		19	01	2.C.14	-2	" "	0984
		19	01	2.C.14	-3	" "	0984
		19	01	2.C.14	-4	" "	0984
		19	01	2.C.14	-5	" "	0984
		19	01	2.D.17		Mold Injection System Cleaner	1009

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1			
						PAGE A-1.1-09-2			
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							
EXPERIMENT:						MISSION MODE: A			
1.1 Metallurgical Processes; Composite Materials				BASIC FUNCTION: 09 Scheduled Maintenance					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE		NO.		
33	(Continued)	19	01	2.C.14	-1	Mold Injection System Cleaner		1009	
		19	01	2.C.14	-2	"	"	"	1009
		19	01	2.C.14	-3	"	"	"	1009
		19	01	2.C.14	-4	"	"	"	1009
		19	01	2.C.14	-5	"	"	"	1009
		19	01	2.D.18		Dispersion Control System Cleaner		1109	
		19	01	2.C.14	-1	"	"	"	1109
		19	01	2.D.14	-2	"	"	"	1109
		19	01	2.D.14	-3	"	"	"	1109
		19	01	2.D.14	-4	"	"	"	1109
		19	01	2.D.14	-5	"	"	"	1109
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner		1021	
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner		1021	
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner		1021	
		19	01	2.C.14	-1	Materials Forming Equipment Cleaner		1021	
		19	01	2.C.14	-2	Materials Forming Equipment Cleaner		1021	
		19	01	2.C.14	-3	Materials Forming Equipment Cleaner		1021	
		19	01	2.C.14	-4	Materials Forming Equipment Cleaner		1021	
		19	01	2.C.14	-5	Materials Forming Equipment Cleaner		1021	
		19	01	2.D.21	-1	Mixing Unit Cleaner		0998	
		19	01	2.D.21	-2	"	"	"	0998
		19	01	2.C.14	-1	"	"	"	0998

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.1-09-3		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 09 Scheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
33	(Continued)	19	01	2.C.14	-2	Mixing Unit Cleaner	0998		
		19	01	2.C.14	-3	" " "	0998		
		19	01	2.C.14	-4	" " "	0998		
		19	01	2.C.14	-5	" " "	0998		
		19	01	4.D.06		" " "	0998		
		19	01	4.D.06		Environmental Chamber Cleaner	1062		
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027		
		19	01	4.D.06		Furnace Cleaner	0984		
		19	01	4.D.06		Mold Injection System Cleaner	1009		
		19	01	4.D.06		Dispersion Control System Cleaner	1109		
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021		
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048		
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048		
		19	01	2.C.14	-1	Materials Analysis Equipment Cleaner	1048		
		19	01	2.C.14	-2	Materials Analysis Equipment Cleaner	1048		
		19	01	2.C.14	-3	Materials Analysis Equipment Cleaner	1048		
		19	01	2.C.14	-4	Materials Analysis Equipment Cleaner	1048		
		19	01	2.C.14	-5	Materials Analysis Equipment Cleaner	1048		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-09-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029
		20	01	2.D.14		Liquid Metal Supply System Assembler	1030

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.1-09-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.1 Metallurgical Processes; Composite Materials					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1	Furnace Disassembler	0986
		20	01	2.D.24	-1	Furnace Assembler	0987
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		21	01	2.D.17		Mold Injection System Disassembler	1011
		20	01	2.D.17		Mold Injection System Assembler	1012
		26	01	2.D.17		Mold Injection System Module Remover	1006
		27	01	2.D.17		Mold Injection System Module Installer	1007

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-09-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials			MISSION MODE: A			
			BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	21	01	2.D.18	Dispersion Control System Disassembler	1111
		20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		28	01	2.D.53	Chill System Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21 -1	Mixing Unit Disassembler	1000
		21	01	2.D.21 -2	" " "	1000
		20	01	2.D.21 -1	Mixing Unit Assembler	1001
		20	01	2.D.21 -2	" " "	1001
		26	01	2.D.21 -1	Mixing Unit Module Remover	0995
		26	01	2.D.21 -2	" " " "	0995
		27	01	2.D.21 -1	Mixing Unit Module Installer	0996
		27	01	2.D.21 -2	" " " "	0996
		21	01	2.D.50	Slip Cast Injection System Disassembler	1123
		20	01	2.D.50	Slip Cast Injection System Assembler	1124
		26	01	2.D.50	Slip Cast Injection System Module Remover	1119
		27	01	2.D.50	Slip Cast Injection System Module Installer	1120
		21	01	2.D.22	Vibrator Disassembler	1087
		20	01	2.D.22	Vibrator Assembler	1088

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-09-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials					MISSION MODE: A		
					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	26	01	2.D.22		Vibrator Module Remover	1083
		27	01	2.D.22		Vibrator Module Installer	1084
		21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.1 Metallurgical Processes; Composite Materials			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
17	Conduct voice conferences with ground	05 05	01 01	4.A.02 3.I.04		Radio Communicator " "	0206 0206
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.1-10-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.1 Metallurgical Processes; Composite Materials			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029
		20	01	2.D.14		Liquid Metal Supply System Assembler	1030
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1	Furnace Disassembler	0986
		20	01	2.D.24	-1	Furnace Assembler	0987
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.1-10-3

DISCIPLINE: Materials Science & Mfg.

FPE/SUBGROUP: MS-1 Materials Science & Mfg. in Space

EXPERIMENT:

MISSION MODE: A

1.1 Metallurgical Processing; Composite Materials

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	21	01	2.D.17	Mold Injection System Disassembler	1011
		20	01	2.D.17	Mold Injection System Assembler	1012
		26	01	2.D.17	Mold Injection System Module Remover	1006
		27	01	2.D.17	Mold Injection System Module Installer	1007
		21	01	2.D.18	Dispersion Control System Disassembler	1111
		20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.53	Chill Systems Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21	-1 Mixing Unit Disassembler	1000
		21	01	2.D.21	-2 " " "	1000
		20	01	2.D.21	-1 Mixing Unit Assembler	1001
		20	01	2.D.21	-2 " " "	1001
		26	01	2.D.21	-1 Mixing Unit Module Remover	0995
		26	01	2.D.21	-2 " " " "	0995
		27	01	2.D.21	-1 Mixing Unit Module Installer	0996
		27	01	2.D.21	-2 " " " "	0996
		21	01	2.D.50	Slip Cast Injection System Disassembler	1123
		20	01	2.D.50	Slip Cast Injection System Assembler	1124

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-104
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Mfg. in Space			
EXPERIMENT:						MISSION MODE: A
1.1 Metallurgical Processing; Composite Materials			BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.D.50	Slip Cast Injection System Module Remover	1119
		27	01	2.D.50	Slip Cast Injection System Module Installer	1120
		21	01	2.D.22	Vibrator Disassembler	1087
		20	01	2.D.22	Vibrator Assembler	1088
		26	01	2.D.22	Vibrator Module Remover	1083
		27	01	2.D.22	Vibrator Module Installer	1084
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.B.06	-1 Computer Disassembler	1056
		20	01	2.B.06	-1 Computer Assembler	1057
		26	01	2.B.06	-1 Computer Module Remover	0519
		27	01	2.B.06	-1 Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		21	01	2.D.27	Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27	Materials Analysis Equipment Assembler	1051
		26	01	2.D.27	Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer	1045

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.1-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processing; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier 1066
		07	01	4.C.02		Environmental Chamber Fault Identifier 1066
		28	01	2.D.13	-1	Environmental Chamber Repairer 1065
		28	01	2.D.13	-2	" " " 1065
		28	01	2.D.13	-3	" " " 1065
		07	01	2.D.14		Liquid Metal Supply System Fault Identifier 1032
		07	01	4.C.02		Liquid Metal Supply System Fault Identifier 1032
		28	01	2.D.14		Liquid Metal Supply System Repairer 1031
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier 1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier 1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer 1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier 1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier 1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer 1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier 1140

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1, 1-10-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.1 Metallurgical Processing; Composite Materials					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	4.C.02	Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13	Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24	Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24	Furnace Repairer	0988
		07	01	2.D.17	Mold Injection System Fault Identifier	1014
		07	01	4.D.02	Mold Injection System Fault Identifier	1014
		28	01	2.D.17	Mold Injection System Repairer	1013
		07	01	2.D.18	Dispersion Control System Fault Identifier	1114
		07	01	4.C.02	Dispersion Control System Fault Identifier	1114
		28	01	2.D.18	Dispersion Control System Repairer	1113
		07	01	2.D.53	Chill System Fault Identifier	1078
		07	01	4.C.02	" " " "	1078
		28	01	2.D.53	Chill System Repairer	1077
		07	01	2.D.21	Mixing Unit Fault Identifier	1003
		07	01	2.D.21	" " " "	1003
		07	01	4.C.02	" " " "	1003
		28	01	2.D.21	Mixing Unit Repairer	1002
		28	01	2.D.21	" " " "	1002
		07	01	2.D.50	Slip Cast Injection System Fault Identifier	1126
		07	01	4.C.02	Slip Cast Injection System Fault Identifier	1126
		28	01	2.D.50	Slip Cast Injection System Repairer	1125

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.1-10-7

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.1 Metallurgical Processing; Composite Materials MISSION MODE: A

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	2.D.22	Vibrator Fault Identifier	1090
		07	01	4.C.02	" " "	1090
		28	01	2.D.22	Vibrator Repairer	1089
		07	01	2.D.52	VHF Power Unit Fault Identifier	1103
		07	01	4.C.02	" " " " "	1103
		28	01	2.D.52	VHF Power Unit Repairer	1102
		07	01	2.B.06	-1 Computer Fault Identifier	0523
		07	01	4.C.02	" " "	0523
		28	01	2.B.06	-1 Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150
		28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052

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DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie; limited duration

EXPERIMENT:

1.0 Metallurgical Processes

1.2 Metal Foams and Controlled-Density
Materials

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-04-1
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				MISSION MODE: A
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials		BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	Set up specific apparatus configurations	18	01	2.D.13	-1	Environmental Chamber Unstower 1058
		18	01	2.D.13	-2	" " " 1058
		18	01	2.D.13	-3	" " " 1058
		18	01	2.D.14		Liquid Metal Supply System 1023
						Unstower
		18	01	2.B.06	-2	Materials Science C/D Equipment 1161
						Unstower
		18	01	2.D.15		Atmosphere Supply/Control System 1162
						Unstower
		18	01	4.D.13		Power Conditioning/Distribution 1163
						System Unstower
		18	01	2.D.24	-1	Furnace Unstower 0980
		18	01	2.D.17		Mold Injection System Unstower 1005
		18	01	2.D.18		Dispersion Control System 1105
						Unstower
		18	01	2.D.19	-1	Materials Forming Equipment 1017
						Unstower
		18	01	2.D.19	-2	Materials Forming Equipment 1017
						Unstower
		18	01	2.D.19	-3	Materials Forming Equipment 1017
						Unstower
		22	01	2.D.19	-1	Materials Forming Equipment 1018
						Translocator
		22	01	2.D.19	-2	Materials Forming Equipment 1018
						Translocator
		22	01	2.D.19	-3	Materials Forming Equipment 1018
						Translocator
		27	01	2.D.19	-1	Materials Forming Equipment 1016
						Installer
		27	01	2.D.19	-2	Materials Forming Equipment 1016
						Installer

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-04-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	(Continued)	27	01	2.D.19	-3	Materials Forming Equipment Installer 1016
		18	01	2.D.20		Internal Attachments Unstower 1152
		22	01	2.D.20		Internal Attachments Translocator 1153
		27	01	2.D.20		Internal Attachments Installer 1151
		18	01	2.D.53		Chill System Unstower 1068
		22	01	2.D.53		Chill System Translocator 1069
		27	01	2.D.53		Chill System Installer 1067
		18	01	2.A.04	-3	TV Camera Unstower 0054
		22	01	2.A.04	-3	TV Camera Translocator 0026
		27	01	2.A.04	-3	TV Camera Installer 0306
		18	01	2.D.21	-1	Mixing Unit Unstower 0992
		18	01	2.D.21	-2	" " " 0992
		18	01	2.D.21	-3	" " " 0992
		22	01	2.D.21	-1	Mixing Unit Translocator 0993
		22	01	2.D.21	-2	" " " 0993
		22	01	2.D.21	-3	" " " 0993
		27	01	2.D.21	-1	Mixing Unit Installer 0991
		27	01	2.D.21	-2	" " " 0991
		27	01	2.D.21	-3	" " " 0991
		18	01	2.D.22		Vibrator Unstower 1080
		22	01	2.D.22		Vibrator Translocator 1081
		27	01	2.D.22		Vibrator Installer 1079
		18	01	2.D.52		VHF Power Unit Unstower 1092
		22	01	2.D.52		VHF Power Unit Translocator 1093
		27	01	2.D.52		VHF Power Unit Installer 1091
		18	01	2.B.06	-1	Computer Unstower 1054
		18	01	4.D.14		Heat Rejection System Unstower 1142
		18	01	2.D.27		Materials Analysis Equipment Unstower 1041

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.2-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	22	01	2.D.27		Materials Analysis Equipment Translocator	1042
		27	01	2.D.27		Materials Analysis Equipment Installer	1040
		18	01	2.C.14		Metal Foam Sample Unstower	1164
		22	01	2.C.14		Metal Foam Sample Translocator	1165
		27	01	2.C.14		Metal Foam Sample Installer	1166
11	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.04	-7	" "	0206
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.04	-7	" " "	0847
		15	01	2.C.14		" " "	0847
		26	01	2.C.14		Metal Foam Sample Remover	1167
		26	01	2.D.24		" " " "	1167
		26	01	2.D.14		" " " "	1167
		26	01	2.D.20		" " " "	1167
		27	01	2.C.14		Metal Foam Sample Installer	1166
		27	01	2.D.24	-1	" " " "	1166
		27	01	2.D.14		" " " "	1166
		27	01	2.D.20		" " " "	1166
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1,2-04-4	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials				MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		26	01	2.D.17		Mold Injection System Module Remover	1006
		27	01	2.D.17		Mold Injection System Module Installer	1007
		26	01	2.D.18		Dispersion Control System Module Remover	1106

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.2-04-5

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & MISSION MODE: A

Controlled-Density Materials

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.D.18		Dispersion Control System Module Installer	1108
		26	01	2.D.19	-1	Materials Forming Equipment Remover	1019
		26	01	2.D.19	-2	Materials Forming Equipment Remover	1019
		26	01	2.D.19	-3	Materials Forming Equipment Remover	1019
		27	01	2.D.19	-1	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-2	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-3	Materials Forming Equipment Installer	1016
		26	01	2.D.20		Internal Attachments Remover	1154
		27	01	2.D.20		Internal Attachments Installer	1151
		26	01	2.D.53		Chill System Remover	1070
		27	01	2.D.53		Chill System Installer	1067
		26	01	2.D.53		Chill System Module Remover	1071
		27	01	2.D.53		Chill System Module Installer	1072
		26	01	2.A.04	-3	TV Camera Remover	0661
		27	01	2.A.04	-3	TV Camera Installer	0306
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		26	01	2.D.21	-1	Mixing Unit Remover	0994
		26	01	2.D.21	-2	" " "	0994
		26	01	2.D.21	-3	" " "	0994
		27	01	2.D.21	-1	Mixing Unit Installer	0991
		27	01	2.D.21	-2	" " "	0991
		27	01	2.D.21	-3	" " "	0991

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.2-04-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials			MISSION MODE: A				
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.D.21	-1	Mixing Unit Module Remover	0995
		26	01	2.D.21	-2	" " " "	0995
		26	01	2.D.21	-3	" " " "	0995
		27	01	2.D.21	-1	Mixing Unit Module Installer	0996
		27	01	2.D.21	-2	" " " "	0996
		27	01	2.D.21	-3	" " " "	0996
		26	01	2.D.22		Vibrator Remover	1082
		27	01	2.D.22		Vibrator Installer	1079
		26	01	2.D.22		Vibrator Module Remover	1083
		27	01	2.D.22		Vibrator Module Installer	1084
		26	01	2.D.52		VHF Power Unit Remover	1094
		27	01	2.D.52		VHF Power Unit Installer	1091
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
		08	01	2.D.52		VHF Power Unit Calibrator	1097
		08	01	4.C.01		" " " "	1097
43	Install TV cameras	23	01	2.A.04	-3	TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-04-7	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
49	Install optical instrumentation and measuring devices	27 27	01 01	2.A.04 2.D.27	-3	TV Camera Installer Materials Analysis Equipment Installer	0306 1040

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4	Secure apparatus	17	01	2.D.13	-1	Environmental Chamber Stower 1061
		17	01	2.D.13	-2	" " " 1061
		17	01	2.D.13	-3	" " " 1061
		17	01	2.D.14		Liquid Metal Supply System Stower 1026
		17	01	2.B.06	-2	Materials Science C/D Equipment 1168
						Stower
		17	01	2.D.15		Atmosphere Supply/Control System 1169
						Stower
		17	01	4.D.13		Power Conditioning/Distribution 1170
						System Stower
		17	01	2.D.24	-1	Furnace Stower 0983
		17	01	2.D.17		Mold Injection System Stower 1008
		17	01	2.D.18		Dispersion Control System Stower 1107
		17	01	2.D.19	-1	Materials Forming Equipment Stower 1020
		17	01	2.D.19	-2	" " " " 1020
		17	01	2.D.19	-3	" " " " 1020
		22	01	2.D.19	-1	Materials Forming Equipment 1018
						Translocator
		22	01	2.D.19	-2	Materials Forming Equipment 1018
						Translocator
		22	01	2.D.19	-3	Materials Forming Equipment 1018
						Translocator
		26	01	2.D.19	-1	Materials Forming Equipment 1019
						Remover
		26	01	2.D.19	-2	Materials Forming Equipment 1019
						Remover
		26	01	2.D.19	-3	Materials Forming Equipment 1019
						Remover
		17	01	2.D.20		Internal Attachments Stower 1155

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-05-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials		MISSION MODE: A				
		BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4.	(Continued)	22	01	2.D.20		Internal Attachments Translocator 1153
		26	01	2.D.20		Internal Attachments Remover 1154
		17	01	2.D.53		Chill System Stower 1073
		22	01	2.D.53		Chill System Translocator 1069
		26	01	2.D.53		Chill System Remover 1070
		17	01	2.A.04	-3	TV Camera Stower 0064
		22	01	2.A.04	-3	TV Camera Translocator 0026
		26	01	2.A.04	-3	TV Camera Remover 0661
		17	01	2.D.21	-1	Mixing Unit Stower 0997
		17	01	2.D.21	-2	" " " 0997
		17	01	2.D.21	-3	" " " 0997
		22	01	2.D.21	-1	Mixing Unit Translocator 0993
		22	01	2.D.21	-2	" " " 0993
		22	01	2.D.21	-3	" " " 0993
		26	01	2.D.21	-1	Mixing Unit Remover 0994
		26	01	2.D.21	-2	" " " 0994
		26	01	2.D.21	-3	" " " 0994
		17	01	2.D.22		Vibrator Stower 1085
		22	01	2.D.22		Vibrator Translocator 1081
		26	01	2.D.22		Vibrator Remover 1082
		17	01	2.D.52		VHF Power Unit Stower 1098
		22	01	2.D.52		VHF Power Unit Translocator 1093
		26	01	2.D.52		VHF Power Unit Remover 1094
		17	01	2.B.06	-1	Computer Stower 1160
		17	01	4.D.14		Heat Rejection System Stower 1145
		17	01	2.D.27		Materials Analysis Equipment Stower 1047
		22	01	2.D.27		Materials Analysis Equipment Translocator 1042

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-05-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
BASIC FUNCTION: 05 Experiment Shutdown						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
4	(Continued)	26	01	2.D.27		Materials Analysis Equipment Remover 1043
		17	01	2.C.14		Metal Foam Sample Stower 1171
		22	01	2.C.14		Metal Foam Sample Translocator 1165
		26	01	2.C.14		Metal Foam Sample Remover 1167
11	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator 0206
		05	01	3.I.04	-7	" " 0206
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner 1062
		19	01	2.D.13	-2	" " " 1062
		19	01	2.D.13	-3	" " " 1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner 1027
		19	01	2.D.24	-1	Furnace Cleaner 0984
		19	01	2.D.17		Mold Injection System Cleaner 1009
		19	01	2.D.18		Dispersion Control System Cleaner 1109
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner 1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner 1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner 1021
		19	01	2.D.21	-1	Mixing Unit Cleaner 0998
		19	01	2.D.21	-2	" " " 0998
		19	01	2.D.21	-3	" " " 0998
		19	01	2.D.27		Materials Analysis Equipment Cleaner 1048

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.0-05-4	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
		BASIC FUNCTION: 05 Experiment Shutdown					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	4.D.05		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Environmental Chamber Cleaner	1062
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	4.D.06		Furnace Cleaner	0984
		19	01	4.D.06		Mold Injection System Cleaner	1009
		19	01	4.D.06		Dispersion Control System Cleaner	1109
41	Communicate experiment results to earth	05	01	3.I.04	-7	Radio Communicator	0206
		05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.2-06-1
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:			MS-1 Materials Science & Manufacturing in Space
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials			MISSION MODE:		A
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	Conduct voice conferences with ground	05 05	01 01	4.A.02 3.I.04	-7	Radio Communicator " "	0206 0206
2	Initiate prescribed processing sequences	15	01	3.I.04	-7	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " "	0847
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		15	01	3.I.04	-7	Materials Science C/D Equipment Control Actuator	1172
5	Continuously monitor experiment conduct	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Liquid Metal Supply System Operation Monitor	1028
		01	01	2.D.14		Liquid Metal Supply System Operation Monitor	1028
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.05	-2	Power Conditioning/Distribution System Operation Monitor	1136

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						PAGE	A-1.2-06-2
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials						MISSION MODE:	A
						BASIC FUNCTION:	06 Experiment Conduct
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.B.05	-2	Mold Injection System Operation Monitor	1010
		01	01	2.D.17		Mold Injection System Operation Monitor	1010
		01	01	2.B.06	-2	Dispersion Control System Operation Monitor	1110
		01	01	2.D.18		Dispersion Control System Operation Monitor	1110
		01	01	2.B.06	-2	Chill System Operation Monitor	1074
		01	01	2.D.53		" " " "	1074
		01	01	2.B.06	-2	Mixing Unit Operation Monitor	0999
		01	01	2.D.21	-1	" " " "	0999
		01	01	2.D.21	-2	" " " "	0999
		01	01	2.D.21	-3	" " " "	0999
		01	01	2.B.06	-2	Vibrator Operation Monitor	1086
		01	01	2.D.22		" " " "	1086
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " "	1099
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-06-3	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials				MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
6	Fine-tune experiment processing	15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	3.I.04	-7	Environmental Chamber Control Actuator	1173
		15	01	2.C.14		Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	3.I.04	-7	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.C.14		Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-1	" " "	1175
		15	01	3.I.04	-7	" " "	1175
		15	01	2.C.14		" " "	1175
		15	01	2.B.06	-2	Dispersion Control System Control Actuator	1176
		15	01	2.D.18		Dispersion Control System Control Actuator	1176

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-06-4	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials				MISSION MODE: A	
				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	15	01	3.I.04	-7	Dispersion Control System Control Actuator	1176
		15	01	2.C.14		Dispersion Control System Control Actuator	1176
		15	01	2.B.06	-2	Mixing Unit Control Actuator	1177
		15	01	2.D.21	-1	" " " "	1177
		15	01	2.D.21	-2	" " " "	1177
		15	01	2.D.21	-3	" " " "	1177
		15	01	3.I.04	-7	" " " "	1177
		15	01	2.C.14		" " " "	1177
		15	01	2.B.06	-2	Liquid Metal Supply System Control Actuator	1178
		15	01	2.D.14		Liquid Metal Supply System Control Actuator	1178
		15	01	3.I.04	-7	Liquid Metal Supply System Control Actuator	1178
		15	01	2.C.14		Liquid Metal Supply System Control Actuator	1178
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	3.I.04	-7	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.C.14		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Mold Injection System Control Actuator	1180
		15	01	2.D.17		Mold Injection System Control Actuator	1180

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.2-06-5		
DISCIPLINE:		Materials Science & Mfg.					FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space		
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials					MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
6	(Continued)	15	01	3.I.04	-7	Mold Injection System Control Actuator	1180		
		15	01	2.C.14		Mold Injection System Control Actuator	1180		
		15	01	2.B.05	-2	Chill System Control Actuator	1181		
		15	01	2.D.53		" " " "	1181		
		15	01	3.I.04	-7	" " " "	1181		
		15	01	2.C.14		" " " "	1181		
		15	01	2.B.06	-2	Vibrator Control Actuator	1182		
		15	01	2.D.22		" " " "	1182		
		15	01	3.I.04	-7	" " " "	1182		
		15	01	2.C.14		" " " "	1182		
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183		
		15	01	2.D.52		" " " "	1183		
		15	01	3.I.04	-7	" " " "	1183		
		15	01	2.C.14		" " " "	1183		
		15	01	2.B.05	-2	Heat Rejection System Control Actuator	1184		
		15	01	4.D.14		Heat Rejection System Control Actuator	1184		
		15	01	3.I.04	-7	Heat Rejection System Control Actuator	1184		
		15	01	2.C.14		Heat Rejection System Control Actuator	1184		
		7	Perform metallographic examinations	04	01	3.I.04	-7	Metal Foam Structure Determiner	1185
				04	01	2.C.14		" " " "	1185

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.2-06-6
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials		MISSION MODE: A					
		BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	04	01	2.D.27	-7	Metal Foam Structure Determiner	1185
		12	01	3.I.04		Metal Foam Structure Analyzer	1186
		12	01	2.C.14		" " " "	1186
		12	01	2.D.27		" " " "	1186
8	Prepare metallographic sections	10	01	2.D.27	-7	Materials Analysis Equipment Controller	1049
		10	01	3.I.04		Materials Analysis Equipment Controller	1049
		10	01	2.C.14		Materials Analysis Equipment Controller	1049
9	Conduct "physical testing" of samples	11	01	2.D.27	-7	Metal Foam Structure Evaluator	1187
		11	01	3.I.04		" " " "	1187
		11	01	2.C.14		" " " "	1187
		12	01	2.D.27	-7	Metal Foam Structure Analyzer	1186
		12	01	3.I.04		" " " "	1186
		12	01	2.C.14		" " " "	1186
10	Prepare detailed test reports	05	01	3.I.04	-7	Metal Foam Structures Test Report Preparer	1188
		05	01	2.C.14	-6	Metal Foam Structures Test Report Preparer	1188
		05	01	2.C.14	-7	Metal Foam Structures Test Report Preparer	1188
		05	01	4.D.08		Metal Foam Structures Test Report Preparer	1188

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.2-06-7
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials		MISSION MODE: A					
		BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	(Continued)	05	01	4.D.10		Metal Foam Structures Test Report Preparer	1188
		05	01	4.D.04		Metal Foam Structures Test Report Preparer	1188
		05	01	2.F.01		Metal Foam Structures Test Report Preparer	1188
		05	01	2.F.02		Metal Foam Structures Test Report Preparer	1188
		05	01	2.F.03		Metal Foam Structures Test Report Preparer	1188
		05	01	2.F.04		Metal Foam Structures Test Report Preparer	1188
36	Schedule experiment runs	13	01	2.B.06	-1	Metal Foam Research Planner	1189
		13	01	2.B.06	-2	" " " "	1189
		13	01	3.I.04	-7	" " " "	1189
37	Define apparatus configuration	13	01	2.D.24	-1	Metal Foam Research Planner	1189
		13	01	2.A.04	-3	" " " "	1189
		13	01	2.B.06	-2	" " " "	1189
		13	01	2.B.06	-1	" " " "	1189
		13	01	2.C.14	-6	" " " "	1189
		13	01	2.C.14	-7	" " " "	1189
		13	01	2.D.53		" " " "	1189
		13	01	2.D.21	-2	" " " "	1189
		13	01	2.D.21	-3	" " " "	1189
		13	01	2.D.13	-1	" " " "	1189

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.2-06-8
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.D.13	-2	Metal Foam Research Planner	1189
		13	01	2.D.13	-3	" " " "	1189
		13	01	2.D.14		" " " "	1189
		13	01	2.D.15		" " " "	1189
		13	01	2.D.17		" " " "	1189
		13	01	2.D.18		" " " "	1189
		13	01	2.D.19		" " " "	1189
		13	01	2.D.20		" " " "	1189
		13	01	2.D.21	-1	" " " "	1189
		13	01	2.D.22		" " " "	1189
		13	01	2.D.25		" " " "	1189
		13	01	2.D.27		" " " "	1189
		13	01	3.I.04	-7	" " " "	1189
		13	01	2.D.52		" " " "	1189
		13	01	4.B.08		" " " "	1189
		13	01	2.D.35		" " " "	1189
		13	01	4.D.06		" " " "	1189
		13	01	4.D.13		" " " "	1189
		13	01	4.D.14		" " " "	1189
38	Define experiment conditions	13	01	2.D.19		Metal Foam Research Planner	1189
		13	01	2.D.20		" " " "	1189
		13	01	2.D.22		" " " "	1189
		13	01	2.D.25		" " " "	1189
		13	01	2.D.27		" " " "	1189
		13	01	2.D.52		" " " "	1189
		13	01	4.B.08		" " " "	1189
		13	01	2.D.35		" " " "	1189

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1	
							PAGE A-1.2-06-9	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space		
EXPERIMENT:		1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials				MISSION MODE: A		
				BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
38	(Continued)	13	01	4.D.06		Metal Foam Research Planner	1189	
		13	01	4.D.13		" " " "	1189	
		13	01	4.D.14		" " " "	1189	
		13	01	2.C.14	-6	" " " "	1189	
		13	01	2.C.14	-7	" " " "	1189	
		13	01	2.D.24	-1	" " " "	1189	
		13	01	2.A.04	-3	" " " "	1189	
		13	01	2.D.53		" " " "	1189	
		13	01	2.D.13	-1	" " " "	1189	
		13	01	2.D.13	-2	" " " "	1189	
		13	01	2.D.13	-3	" " " "	1189	
		13	01	2.D.15		" " " "	1189	
		13	01	2.D.18		" " " "	1189	
		13	01	2.B.05	-1	" " " "	1189	
		13	01	2.B.05	-2	" " " "	1189	
		13	01	3.I.04	-7	" " " "	1189	
		13	01	2.D.21	-1	" " " "	1189	
		13	01	2.D.21	-2	" " " "	1189	
		13	01	2.D.21	-3	" " " "	1189	
		13	01	2.D.14		" " " "	1189	
		13	01	2.D.17		" " " "	1189	
40	Evaluate experiment results	11	01	3.I.04	-7	Metal Foam Research Evaluator	1190	
		11	01	2.C.14	-6	" " " "	1190	
		11	01	2.C.14	-7	" " " "	1190	
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-06-10	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams and Controlled-Density Materials						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
47	(Continued)	10	01	4.A.01	Telemetry Equipment Controller	1104	
		10	01	4.D.10	Data Recorder Controller	1157	
		10	01	2.D.27	Materials Analysis Equipment Controller	1049	
		10	01	4.A.02	Radio Communicator	0206	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.2-09-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials			MISSION MODE: A				
			BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	Conduct voice conferences with ground	05 05	01 01	4.A.02 3.I.04	-7	Radio Communicator " "	0206 0206
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.C.14	-6	" " "	1062
		19	01	2.C.14	-7	" " "	1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-6	Liquid Metal Supply System Cleaner	1027
		19	01	2.C.14	-7	Liquid Metal Supply System Cleaner	1027
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	2.C.14	-6	" "	0984
		19	01	2.C.14	-7	" "	0984
		19	01	2.D.17		Mold Injection System Cleaner	1009
		19	01	2.C.14	-6	" " " "	1009
		19	01	2.C.14	-7	" " " "	1009
		19	01	2.D.18		Dispersion Control System Cleaner	1109
		19	01	2.C.14	-6	" " " "	1109
		19	01	2.C.14	-7	" " " "	1109
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner	1021

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-09-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
33	(Continued)	19	01	2.C.14	-6	Materials Forming Equipment Cleaner 1021
		19	01	2.C.14	-7	Materials Forming Equipment Cleaner 1021
		19	01	2.D.21	-1	Mixing Unit Cleaner 0998
		19	01	2.D.21	-2	" " " 0998
		19	01	2.C.14	-6	" " " 0998
		19	01	2.C.14	-7	" " " 0998
		19	01	2.D.21	-3	" " " 0998
		19	01	4.D.06		" " " 0998
		19	01	4.D.06		Environmental Chamber Cleaner 1062
		19	01	4.D.06		Liquid Metal Supply System Cleaner 1027
		19	01	4.D.06		Furnace Cleaner 0984
		19	01	4.D.06		Mold Injection System Cleaner 1009
		19	01	4.D.06		Dispersion Control System Cleaner 1109
		19	01	4.D.06		Materials Forming Equipment Cleaner 1021
		19	01	4.D.06		Materials Analysis Equipment Cleaner 1048
		19	01	2.D.27		Materials Analysis Equipment Cleaner 1048
		19	01	2.C.14	-6	Materials Analysis Equipment Cleaner 1048
		19	01	2.C.14	-7	Materials Analysis Equipment Cleaner 1048
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler 1036

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-09-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029
		20	01	2.D.14		Liquid Metal Supply System Assembler	1030
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.2-09-4

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials

MISSION MODE: A

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	27	01	2.D.14	Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15	Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15	Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1 Furnace Disassembler	0986
		20	01	2.D.24	-1 Furnace Assembler	0987
		26	01	2.D.24	-1 Furnace Module Remover	0981
		27	01	2.D.24	-1 Furnace Module Installer	0982
		21	01	2.D.17	Mold Injection System Disassembler	1011
		20	01	2.D.17	Mold Injection System Assembler	1012
		26	01	2.D.17	Mold Injection System Module Remover	1006
		27	01	2.D.17	Mold Injection System Module Installer	1007
		21	01	2.D.18	Dispersion Control System Disassembler	1111

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-09-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
BASIC FUNCTION: 09 Scheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.53	Chill System Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21	Mixing Unit Disassembler	1000
		21	01	2.D.21	" " "	1000
		20	01	2.D.21	Mixing Unit Assembler	1001
		20	01	2.D.21	" " "	1001
		26	01	2.D.21	Mixing Unit Module Remover	0995
		26	01	2.D.21	" " " "	0995
		27	01	2.D.21	Mixing Unit Module Installer	0996
		27	01	2.D.21	" " " "	0996
		21	01	2.D.22	Vibrator Disassembler	1087
		20	01	2.D.22	Vibrator Assembler	1088
		26	01	2.D.22	Vibrator Module Remover	1083
		27	01	2.D.22	Vibrator Module Installer	1084
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.B.06	Computer Disassembler	1056
		20	01	2.B.06	Computer Assembler	1057
		26	01	2.B.06	Computer Module Remover	0519
		27	01	2.B.06	Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

PAGE A-1.2-09-6

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials

MISSION MODE: A

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.21	-3	Mixing Unit Disassembler	1000
		20	01	2.D.21	-3	Mixing Unit Assembler	1001
		26	01	2.D.21	-3	Mixing Unit Module Remover	0995
		27	01	2.D.21	-3	Mixing Unit Module Installer	0996
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.2-10-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
BASIC FUNCTION: 10 Unscheduled Maintenance							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.04	-7	" "	0206
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.2-10-2	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A		
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029
		20	01	2.D.14		Liquid Metal Supply System Assembler	1030
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1143
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1	Furnace Disassembler	0986
		20	01	2.D.24	-1	Furnace Assembler	0987
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnance Module Installer	0982

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	21	01	2.D.17	Mold Injection System Disassembler	1011
		20	01	2.D.17	Mold Injection System Assembler	1012
		26	01	2.D.17	Mold Injection System Module Remover	1006
		27	01	2.D.17	Mold Injection System Module Installer	1007
		21	01	2.D.18	Dispersion Control System Disassembler	1111
		20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.53	Chill System Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21 -1	Mixing Unit Disassembler	1000
		21	01	2.D.21 -2	" " "	1000
		20	01	2.D.21 -1	Mixing Unit Assembler	1001
		20	01	2.D.21 -2	" " "	1001
		26	01	2.D.21 -1	Mixing Unit Module Remover	0995
		26	01	2.D.21 -2	" " " "	0995
		27	01	2.D.21 -1	Mixing Unit Module Installer	0996
		27	01	2.D.21 -2	" " " "	0996
		21	01	2.D.22	Vibrator Disassembler	1087
		20	01	2.D.22	Vibrator Assembler	1088
		26	01	2.D.22	Vibrator Module Remover	1083
		27	01	2.D.22	Vibrator Module Installer	1084

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.2-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.21	-3	Mixing Unit Disassembler	1000
		20	01	2.D.21	-3	Mixing Unit Assembler	1001
		26	01	2.D.21	-3	Mixing Unit Module Remover	0995
		27	01	2.D.21	-3	Mixing Unit Module Installer	0996
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.2-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials					MISSION MODE: A	
BASIC FUNCTION: 10 Unscheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier 1066
		07	01	4.C.02		Environmental Chamber Fault Identifier 1066
		28	01	2.D.13	-1	Environmental Chamber Repairer 1065
		28	01	2.D.13	-2	" " " 1065
		28	01	2.D.13	-3	" " " 1065
		07	01	2.D.14		Liquid Metal Supply System Fault Identifier 1032
		07	01	4.C.02		Liquid Metal Supply System Fault Identifier 1032
		28	01	2.D.14		Liquid Metal Supply System Repairer 1031
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier 1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier 1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer 1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier 1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier 1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer 1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier 1140

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.2-10-6		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials						MISSION MODE: A			
						BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
48	(Continued)	07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier			1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer			1139
		07	01	2.D.24	-1	Furnace Fault Identifier			0989
		07	01	4.C.02		" " "			0989
		28	01	2.D.24	-1	Furnace Repairer			0988
		07	01	2.D.17		Mold Injection System Fault Identifier			1014
		07	01	4.C.02		Mold Injection System Fault Identifier			1014
		28	01	2.D.17		Mold Injection System Repairer			1013
		07	01	2.D.18		Dispersion Control System Fault Identifier			1114
		07	01	4.C.02		Dispersion Control System Fault Identifier			1114
		28	01	2.D.18		Dispersion Control System Repairer			1113
		07	01	2.D.53		Chill System Fault Identifier			1078
		07	01	4.C.02		" " " "			1078
		28	01	2.D.53		Chill System Repairer			1077
		07	01	2.D.21	-1	Mixing Unit Fault Identifier			1003
		07	01	2.D.21	-2	" " " "			1003
		07	01	4.C.02		" " " "			1003
		28	01	2.D.21	-1	Mixing Unit Repairer			1002
		28	01	2.D.21	-2	" " "			1002
		07	01	2.D.21	-3	Mixing Unit Fault Identifier			1003
		07	01	4.C.02		" " " "			1003
		28	01	2.D.21	-3	Mixing Unit Repairer			1002
		07	01	2.D.22		Vibrator Fault Identifier			1090
		07	01	4.C.02		" " "			1090

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

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DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: 1.2 Metallurgical Processes; Metal Foams & Controlled-Density Materials

MISSION MODE: A

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	28	01	2.D.22	Vibrator Repairer	1089
		07	01	2.D.52	VHF Power Unit Fault Identifier	1103
		07	01	4.C.02	" " " " "	1103
		28	01	2.D.52	VHF Power Unit Repairer	1102
		07	01	2.A.04	TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689
		07	01	2.B.06	Computer Fault Identifier	0523
		07	01	4.C.02	" " " "	0523
		28	01	2.B.06	Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150
		28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		28	01	2.A.04	TV Camera Repairer	0690

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Metallurgical Processes

1.3 Free Casting of Metals

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	Set up experiment in required configurations	13	01	2.C.23		Metal Free Casting Research Planner 1198
		13	01	3.I.04	-8	Metal Free Casting Research Planner 1198
		13	01	2.D.13	-1	Metal Free Casting Research Planner 1198
		13	01	2.D.13	-2	Metal Free Casting Research Planner 1198
		13	01	2.D.13	-3	Metal Free Casting Research Planner 1198
		13	01	2.D.13	-4	Metal Free Casting Research Planner 1198
		13	01	2.D.14		Metal Free Casting Research Planner 1198
		13	01	2.B.06	-1	Metal Free Casting Research Planner 1198
		13	01	2.B.06	-2	Metal Free Casting Research Planner 1198
		13	01	2.D.15		Metal Free Casting Research Planner 1198
		13	01	4.D.13		Metal Free Casting Research Planner 1198
		13	01	2.D.24	-1	Metal Free Casting Research Planner 1198
		13	01	2.D.24	-2	Metal Free Casting Research Planner 1198
		13	01	2.D.32		Metal Free Casting Research Planner 1198
		13	01	2.D.33		Metal Free Casting Research Planner 1198

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						PAGE A-1.3-04-2
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals						MISSION MODE: A
						BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	(Continued)	13	01	2.D.18	Metal Free Casting Research Planner	1198
		13	01	2.D.46	Metal Free Casting Research Planner	1198
		13	01	2.D.47	Metal Free Casting Research Planner	1198
		13	01	2.D.48	Metal Free Casting Research Planner	1198
		13	01	2.D.20	Metal Free Casting Research Planner	1198
		13	01	2.D.34	Metal Free Casting Research Planner	1198
		13	01	2.A.44	Metal Free Casting Research Planner	1198
		13	01	2.D.53	Metal Free Casting Research Planner	1198
		13	01	2.A.17	-7 Metal Free Casting Research Planner	1198
		13	01	2.A.04	Metal Free Casting Research Planner	1198
		13	01	2.A.43	Metal Free Casting Research Planner	1198
		13	01	2.D.21	-1 Metal Free Casting Research Planner	1198
		13	01	2.D.21	-2 Metal Free Casting Research Planner	1198
		13	01	2.D.56	Metal Free Casting Research Planner	1198
		13	01	2.D.52	Metal Free Casting Research Planner	1198

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-3
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A
1.3 Metallurgical Processes; Free Casting of Metals				BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	(Continued)	13	01	4.D.14	Metal Free Casting Research Planner	1198
		13	01	2.D.25	Metal Free Casting Research Planner	1198
		18	01	2.C.23	Metal Samples Unstower	1257
		22	01	2.C.23	Metal Samples Translocator	1256
		27	01	2.C.23	Metal Samples Installer	1254
		18	01	2.D.13	-1 Environmental Chamber Unstower	1058
		18	01	2.D.13	-2 " " "	1058
		18	01	2.D.13	-3 " " "	1058
		18	01	2.D.13	-4 " " "	1058
		18	01	2.D.14	Liquid Metal Supply System Unstower	1023
		18	01	2.B.06	-1 Computer Unstower	1054
		18	01	2.B.06	-2 Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15	Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13	Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.24	-1 Furnace Unstower	0980
		18	01	2.D.24	-2 " " "	0980
		18	01	2.D.32	Heating/Positioning Coil Unstower	1271
		22	01	2.D.32	Heating/Positioning Coil Translocator	1270
		27	01	2.D.32	Heating/Positioning Coil Installer	1269
		18	01	2.D.33	Plasma Beam Unit Unstower	1284
		22	01	2.D.33	Plasma Beam Unit Translocator	1283
		27	01	2.D.33	Plasma Beam Unit Installer	1282

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	(Continued)	18	01	2.D.18	Dispersion Control System Unstower	1105
		18	01	2.D.46	Liquid Sphere Deployment System Unstower	1299
		22	01	2.D.46	Liquid Sphere Deployment System Translocator	1298
		27	01	2.D.46	Liquid Sphere Deployment System Installer	1297
		18	01	2.D.47	Hollow Bodies Deployment System Unstower	1314
		22	01	2.D.47	Hollow Bodies Deployment System Translocator	1313
		27	01	2.D.47	Hollow Bodies Deployment System Installer	1312
		18	01	2.D.48	Membrane Drawing Tool Unstower	1329
		22	01	2.D.48	Membrane Drawing Tool Translocator	1328
		27	01	2.D.48	Membrane Drawing Tool Installer	1327
		18	01	2.D.20	Internal Attachments Unstower	1152
		22	01	2.D.20	Internal Attachments Translocator	1153
		27	01	2.D.20	Internal Attachments Installer	1151
		18	01	2.D.34	Atmosphere Analysis Unit Unstower	1203
		22	01	2.D.34	Atmosphere Analysis Unit Translocator	1204
		27	01	2.D.34	Atmosphere Analysis Unit Installer	1205
		18	01	2.A.44	Viewing Device Unstower	1215
		22	01	2.A.44	Viewing Device Translocator	1216
		27	01	2.A.44	Viewing Device Installer	1217
		18	01	2.D.53	Chill System Unstower	1068
		22	01	2.D.53	Chill System Translocator	1069

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-04-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	27	01	2.D.53		Chill System Installer	1067
		18	01	2.A.17	-7	Camera Unstower	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		27	01	2.A.17	-7	Camera Installer	0039
		18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
		18	01	2.A.43		Holographic Device Unstower	1240
		22	01	2.A.43		Holographic Device Translocator	1239
		27	01	2.A.43		Holographic Device Installer	1238
		18	01	2.D.21	-1	Mixing Unit Unstower	0992
		18	01	2.D.21	-2	" " "	0992
		22	01	2.D.21	-1	Mixing Unit Translocator	0993
		22	01	2.D.21	-2	" " "	0993
		27	01	2.D.21	-1	Mixing Unit Installer	0991
		27	01	2.D.21	-2	" " "	0991
		18	01	2.D.56		Heating/Cooling Device Unstower	1253
		22	01	2.D.56		Heating/Cooling Device Translocator	1252
		27	01	2.D.56		Heating/Cooling Device Installer	1251
		27	01	2.A.18		" " " "	1251
		18	01	2.D.52		VHF Power Unit Unstower	1092
		22	01	2.D.52		VHF Power Unit Translocator	1093
		27	01	2.D.52		VHF Power Unit Installer	1091
		18	01	4.D.14		Heat Rejection System Unstower	1142
5	Program automatic control equipment	13	01	2.B.06	-1	Computer Program Determiner	0609
		13	01	3.I.04	-8	" " "	0609
		13	01	2.C.23		" " "	0609

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
5	(Continued)	15	01	2.B.06	-1	Computer Control Actuator 0847
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator 0847
		15	01	3.I.04	-8	" " " 0847
		15	01	2.C.23		" " " 0847
		26	01	2.D.13	-1	Environmental Chamber Module Remover 1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover 1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover 1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover 1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer 1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer 1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer 1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer 1060
		26	01	2.C.23		Metal Sample Remover 1255
		27	01	2.C.23		Metal Sample Installer 1254
		26	01	2.D.14		Liquid Metal Supply System Module Remover 1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer 1025
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator 1330

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-04-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.24	-1	Furnace Module Remover	0981
		26	01	2.D.24	-2	" " "	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		27	01	2.D.24	-2	" " "	0982
		26	01	2.D.32		Heating/Positioning Coil Remover	1268
		27	01	2.D.32		Heating/Positioning Coil Installer	1269
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		26	01	2.D.33		Plasma Beam Unit Remover	1281
		27	01	2.D.33		Plasma Beam Unit Installer	1282
		26	01	2.D.33		Plasma Beam Unit Module Remover	1279
		27	01	2.D.33		Plasma Beam Unit Module Installer	1278
		26	01	2.D.18		Dispersion Control System Module Remover	1106

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	27	01	2.D.18	Dispersion Control System Module Installer	1108
		26	01	2.D.46	Liquid Sphere Deployment System Remover	1296
		27	01	2.D.46	Liquid Sphere Deployment System Installer	1297
		26	01	2.D.46	Liquid Sphere Deployment System Module Remover	1294
		27	01	2.D.46	Liquid Sphere Deployment System Module Installer	1293
		26	01	2.D.47	Hollow Bodies Deployment System Remover	1311
		27	01	2.D.47	Hollow Bodies Deployment System Installer	1312
		26	01	2.D.47	Hollow Bodies Deployment System Module Remover	1309
		27	01	2.D.47	Hollow Bodies Deployment System Module Installer	1308
		26	01	2.D.48	Membrane Drawing Tool Remover	1326
		27	01	2.D.48	Membrane Drawing Tool Installer	1327
		26	01	2.D.48	Membrane Drawing Tool Module Remover	1324
		27	01	2.D.48	Membrane Drawing Tool Module Installer	1323
		26	01	2.D.20	Internal Attachments Remover	1154
		27	01	2.D.20	Internal Attachments Installer	1151
		26	01	2.D.34	Atmosphere Analysis Unit Remover	1206
		27	01	2.D.34	Atmosphere Analysis Unit Installer	1205
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-04-9
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		26	01	2.A.44	Viewing Device Remover	1218
		27	01	2.A.44	Viewing Device Installer	1217
		26	01	2.D.53	Chill System Remover	1070
		27	01	2.D.53	Chill System Installer	1067
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		26	01	2.A.17 -7	Camera Remover	0314
		27	01	2.A.17 -7	Camera Installer	0039
		26	01	2.A.17 -7	Camera Module Remover	0158
		27	01	2.A.17 -7	Camera Module Installer	0160
		26	01	2.A.04 -3	TV Camera Remover	0661
		27	01	2.A.04 -3	TV Camera Installer	0306
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		26	01	2.D.21 -1	Mixing Unit Remover	0994
		26	01	2.D.21 -2	" " "	0994
		27	01	2.D.21 -1	Mixing Unit Installer	0991
		27	01	2.D.21 -2	" " "	0991
		26	01	2.D.21 -1	Mixing Unit Module Remover	0995
		26	01	2.D.21 -2	" " " "	0995
		27	01	2.D.21 -1	Mixing Unit Module Installer	0996
		27	01	2.D.21 -2	" " " "	0996
		26	01	2.D.56	Heating/Cooling Device Remover	1250
		27	01	2.D.56	Heating/Cooling Device Installer	1251
		26	01	2.D.56	Heating/Cooling Device Module Remover	1248
		27	01	2.D.56	Heating/Cooling Device Module Installer	1247

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.				PAGE A-1.3-04-10			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals				MISSION MODE: A			
				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	26	01	2.D.52	VHF Power Unit Remover	1094	
		27	01	2.D.52	VHF Power Unit Installer	1091	
		26	01	2.D.52	VHF Power Unit Module Remover	1095	
		27	01	2.D.52	VHF Power Unit Module Installer	1096	
		26	01	2.A.43	Holographic Device Remover	1237	
		27	01	2.A.43	Holographic Device Installer	1238	
		26	01	2.A.43	Holographic Device Module Remover	1235	
		27	01	2.A.43	Holographic Device Module Installer	1234	
		26	01	4.D.14	Heat Rejection System Module Remover	1143	
		27	01	4.D.14	Heat Rejection System Module Installer	1144	
35	Calibrate instruments	08	01	2.D.27	Materials Analysis Equipment Calibrator	1046	
		08	01	4.C.01	Materials Analysis Equipment Calibrator	1046	
		08	01	2.D.52	VHF Power Unit Calibrator	1097	
		08	01	4.C.01	" " " "	1097	
		08	01	2.D.32	Heating/Positioning Coil Calibrator	1333	
		08	01	4.C.01	Heating/Positioning Coil Calibrator	1333	
		08	01	2.D.33	Plasma Beam Unit Calibrator	1334	
		08	01	4.C.01	" " " "	1334	
		08	01	2.D.48	Membrane Drawing Tool Calibrator	1335	
		08	01	4.C.01	" " " "	1335	
		08	01	2.A.43	Holographic Device Calibrator	1227	
		08	01	4.C.01	" " " "	1227	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-05-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT.	OPER. ENVIR.	DEPENDENCY		TASK - SKILL	
NO.	DESCRIPTION	NO.	NO.	NO.		TITLE	NO.
3	Clean Equipment	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner	1027
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	2.D.24	-2	" "	0984
		19	01	4.D.06		" "	0984
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.33		Plasma Beam Unit Cleaner	1337
		19	01	4.D.06		" " " "	1337
		19	01	2.D.18		Dispersion Control System Cleaner	1109
		19	01	4.D.06		" " " "	1109
		19	01	2.D.46		Liquid Sphere Deployment System Cleaner	1338
		19	01	4.D.06		Liquid Sphere Deployment System Cleaner	1338
		19	01	2.D.47		Hollow Bodies Deployment System Cleaner	1339
		19	01	4.D.06		Hollow Bodies Deployment System Cleaner	1339
		19	01	2.D.48		Membrane Drawing Tool Cleaner	1340
		19	01	4.D.06		" " " "	1340
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-05-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
3	(Continued)	19	01	4.D.06	Materials Analysis Equipment Cleaner	1048
4	Secure apparatus	17	01	2.C.23	Metal Samples Stower	1341
		22	01	2.C.23	Metal Samples Translocator	1256
		26	01	2.C.23	Metal Samples Remover	1255
		17	01	2.D.13 -1	Environmental Chamber Stower	1061
		17	01	2.D.13 -2	" " "	1061
		17	01	2.D.13 -3	" " "	1061
		17	01	2.D.13 -4	" " "	1061
		17	01	2.D.14	Liquid Metal Supply System Stower	1026
		17	01	2.B.06 -1	Computer Stower	1160
		17	01	2.B.06 -2	Materials Science C/D Equipment Stower	1168
		17	01	2.D.15	Atmosphere Supply/Control System Stower	1169
		17	01	4.D.13	Power Conditioning/Distribution System Stower	1170
		17	01	2.D.24 -1	Furnace Stower	0983
		17	01	2.D.24 -2	" "	0983
		17	01	2.D.32	Heating/Positioning Coil Stower	1267
		22	01	2.D.32	Heating/Positioning Coil Translocator	1270
		26	01	2.D.32	Heating/Positioning Coil Remover	1268
		17	01	2.D.33	Plasma Beam Unit Stower	1280
		22	01	2.D.33	Plasma Beam Unit Translocator	1283
		26	01	2.D.33	Plasma Beam Unit Remover	1281
		17	01	2.D.18	Dispersion Control System Stower	1107
		17	01	2.D.46	Liquid Sphere Deployment System Stower	1295

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-05-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
4	(Continued)	22	01	2.D.46	Liquid Sphere Deployment System Translocator	1298	
		26	01	2.D.46	Liquid Sphere Deployment System Remover	1296	
		17	01	2.D.47	Hollow Bodies Deployment System Stower	1310	
		22	01	2.D.47	Hollow Bodies Deployment System Translocator	1313	
		26	01	2.D.47	Hollow Bodies Deployment System Remover	1311	
		17	01	2.D.48	Membrane Drawing Tool Stower	1325	
		22	01	2.D.48	Membrane Drawing Tool Translocator	1328	
		26	01	2.D.48	Membrane Drawing Tool Remover	1326	
		17	01	2.D.20	Internal Attachments Stower	1155	
		22	01	2.D.20	Internal Attachments Translocator	1153	
		26	01	2.D.20	Internal Attachments Remover	1154	
		17	01	2.D.34	Atmosphere Analysis Unit Stower	1207	
		22	01	2.D.34	Atmosphere Analysis Unit Translocator	1204	
		26	01	2.D.34	Atmosphere Analysis Unit Remover	1206	
		17	01	2.A.44	Viewing Device Stower	1219	
		22	01	2.A.44	Viewing Device Translocator	1216	
		26	01	2.A.44	Viewing Device Remover	1218	
		17	01	2.D.53	Chill System Stower	1073	
		22	01	2.D.53	Chill System Translocator	1069	
		26	01	2.D.53	Chill System Remover	1070	
		17	01	2.A.17	-7 Camera Stower	0154	
		22	01	2.A.17	-7 Camera Translocator	1226	
		26	01	2.A.17	-7 Camera Remover	0314	
		17	01	2.A.04	-3 TV Camera Stower	0064	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1			
						PAGE A-1.3-05-4			
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE	NO.			
4	(Continued)	22	01	2.A.04	-3	TV Camera Translocator	0026		
		26	01	2.A.04	-3	TV Camera Remover	0661		
		17	01	2.A.43		Holographic Device Stower	1236		
		22	01	2.A.43		Holographic Device Translocator	1239		
		26	01	2.A.43		Holographic Device Remover	1237		
		17	01	2.D.21	-1	Mixing Unit Stower	0997		
		17	01	2.D.21	-2	" " "	0997		
		22	01	2.D.21	-1	Mixing Unit Translocator	0993		
		22	01	2.D.21	-2	" " "	0993		
		26	01	2.D.21	-1	Mixing Unit Remover	0994		
		17	01	2.D.56		Heating/Cooling Device Stower	1249		
		22	01	2.D.56		Heating/Cooling Device Translocator	1252		
		26	01	2.D.56		Heating/Cooling Device Remover	1250		
		26	01	2.A.18		" " " "	1250		
		17	01	2.D.52		VHF Power Unit Stower	1098		
		22	01	2.D.52		VHF Power Unit Translocator	1093		
		26	01	2.D.52		VHF Power Unit Remover	1094		
		17	01	4.D.14		Heat Rejection System Stower	1145		
		41	Communicate experiment results to earth	05	01	3.I.04	-8	Radio Communicator	0206
				05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328		
		06	01	4.B.08		" "	0328		
		06	01	2.A.27		Photograph Printer Controller	1159		
		06	01	4.B.08		" " "	1159		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-1
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals							MISSION MODE: A
							BASIC FUNCTION: 06 Experiment Conduct
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
2	Operate equipment per instructions	15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-4	Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Liquid Metal Supply System Control Actuator	1178
		15	01	2.D.14		Liquid Metal Supply System Control Actuator	1178
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-1	" " "	1175
		15	01	2.D.24	-2	" " "	1175
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1	
							PAGE A-1.3-06-2	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:			MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.3 Metallurgical Processes; Free Casting of Metals			BASIC FUNCTION:		06 Experiment Conduct	
MISSION MODE:		A						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
2	(Continued)	15	01	2.B.06	-2	Plasma Beam Unit Control Actuator	1273	
		15	01	2.D.33		" " " "	1273	
		15	01	2.B.06	-2	Dispersion Control System Control Actuator	1176	
		15	01	2.D.18		Dispersion Control System Control Actuator	1176	
		15	01	2.B.06	-2	Liquid Sphere Deployment System Control Actuator	1288	
		15	01	2.D.46		Liquid Sphere Deployment System Control Actuator	1288	
		15	01	2.B.06	-2	Hollow Bodies Deployment System Control Actuator	1303	
		15	01	2.D.47		Hollow Bodies Deployment System Control Actuator	1303	
		15	01	2.B.06	-2	Membrane Drawing Tool Control Actuator	1318	
		15	01	2.D.48		Membrane Drawing Tool Control Actuator	1318	
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1214	
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1214	
		15	01	2.B.06	-2	Chill System Control Actuator	1181	
		15	01	2.D.53		" " " "	1181	
		15	01	2.B.06	-2	Camera Control Actuator	0245	
		15	01	2.A.17	-7	" " " "	0245	
		15	01	2.B.66	-2	TV Camera Control Actuator	0899	
		15	01	2.A.04	-3	" " " "	0899	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-06-3	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	Mixing Unit Control Actuator	1177
		15	01	2.D.21	-1	" " " "	1177
		15	01	2.D.21	-2	" " " "	1177
		15	01	2.B.06	-2	Heating/Cooling Device Control Actuator	1242
		15	01	2.D.56		Heating/Cooling Device Control Actuator	1242
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183
		15	01	2.D.52		" " " "	1183
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " " "	0847
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184
6	Monitor manipulative operations	02	01	2.D.32		Heating/Positioning Coil Operation Observer	1342
		02	01	2.B.06	-2	Heating/Positioning Coil Operation Observer	1342
		02	01	2.A.04	-3	Heating/Positioning Coil Operation Observer	1342
		02	01	2.A.44		Heating/Positioning Coil Operation Observer	1342

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-06-4	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals		MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	02	01	2.A.44		Heating/Positioning Coil Operation Observer	1342
		02	01	2.D.46		Liquid Sphere Deployment System Operation Observer	1285
		02	01	2.A.04	-3	Liquid Sphere Deployment System Operation Observer	1285
		02	01	2.B.06	-2	Liquid Sphere Deployment System Operation Observer	1285
		02	01	2.A.44		Liquid Sphere Deployment System Operation Observer	1285
		02	01	2.D.47		Hollow Bodies Deployment System Operation Observer	1301
		02	01	2.B.06	-2	Hollow Bodies Deployment System Operation Observer	1301
		02	01	2.A.04	-3	Hollow Bodies Deployment System Operation Observer	1301
		02	01	2.A.44		Hollow Bodies Deployment System Operation Observer	1301
		02	01	2.D.48		Membrane Drawing Tool Operation Observer	1316
		02	01	2.B.06	-2	Membrane Drawing Tool Operation Observer	1316
		02	01	2.A.04	-3	Membrane Drawing Tool Operation Observer	1316
		02	01	2.A.44		Membrane Drawing Tool Operation Observer	1316
7	Control manipulative operations	10	01	2.B.06	-2	Heating/Positioning Coil Controller	1258

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-06-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals			MISSION MODE: A			
BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
7	(Continued)	10	01	2.D.32	Heating/Positioning Coil Controller	1258
		10	01	2.C.23	Heating/Positioning Coil Controller	1258
		10	01	3.I.04 -8	Heating/Positioning Coil Controller	1258
		10	01	2.B.06 -2	Liquid Sphere Deployment System Controller	1286
		10	01	2.D.46	Liquid Sphere Deployment System Controller	1286
		10	01	2.C.23	Liquid Sphere Deployment System Controller	1286
		10	01	3.I.04 -8	Liquid Sphere Deployment System Controller	1286
		10	01	2.B.06 -2	Hollow Bodies Deployment System Controller	1300
		10	01	2.D.47	Hollow Bodies Deployment System Controller	1300
		10	01	2.C.23	Hollow Bodies Deployment System Controller	1300
		10	01	3.I.04 -8	Hollow Bodies Deployment System Controller	1300
		10	01	2.B.06 -2	Membrane Drawing Tool Controller	1315
		10	01	2.D.48	" " " "	1315
		10	01	2.C.23	" " " "	1315
		10	01	3.I.04 -8	" " " "	1315
9	Operate movie and TV cameras	15	01	2.B.06 -2	Camera Control Actuator	0245

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-06-6	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	(Continued)	15	01	2.A.17	-7	Camera Control Actuator	0245
		15	01	2.B.06	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
10	Prepare detailed debriefing reports	05	01	3.I.04	-8	Metal Free Casting Test Report Preparer	1199
		05	01	2.C.23		Metal Free Casting Test Report Preparer	1199
		05	01	4.D.08		Metal Free Casting Test Report Preparer	1199
		05	01	4.D.10		Metal Free Casting Test Report Preparer	1199
		05	01	4.D.04		Metal Free Casting Test Report Preparer	1199
		05	01	2.F.01		Metal Free Casting Test Report Preparer	1199
		05	01	2.F.02		Metal Free Casting Test Report Preparer	1199
		05	01	2.F.03		Metal Free Casting Test Report Preparer	1199
		05	01	2.F.04		Metal Free Casting Test Report Preparer	1199
11	Make dimensional measurements of products	15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-7
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals							MISSION MODE: A
		BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	(Continued)	15	01	2.C.23		Holographic Device Control	1229
		10	01	2.D.27		Actuator	
		10	01	2.C.23		Materials Analysis Equipment Controller	1049
12	Perform metallographic examinations	10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	3.I.04	-8	Materials Analysis Equipment Controller	1049
		10	01	2.C.23		Materials Analysis Equipment Controller	1049
		04	01	2.C.23		Metal Free Casting Structure Determiner	1200
		04	01	3.I.04	-8	Metal Free Casting Structure Determiner	1200
		04	01	2.D.27		Metal Free Casting Structure Determiner	1200
		12	01	2.C.23		Metal Free Casting Structure Analyzer	1201
		12	01	3.I.04	-8	Metal Free Casting Structure Analyzer	1201
		12	01	2.D.27		Metal Free Casting Structure Analyzer	1201
		36	Schedule experiment runs	13	01	2.B.06	-1

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-8
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3. Metallurgical Processes; Free Casting of Metals		BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	13	01	2.B.06	-2	Metal Free Casting Research Planner	1198
		13	01	3.I.04	-8	Metal Free Casting Research Planner	1198
37	Define apparatus configuration	13	01	2.D.13	-4	Metal Free Casting Research Planner	1198
		13	01	2.A.04	-3	Metal Free Casting Research Planner	1198
		13	01	2.B.06	-2	Metal Free Casting Research Planner	1198
		13	01	2.B.06	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.24	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.24	-2	Metal Free Casting Research Planner	1198
		13	01	2.D.56		Metal Free Casting Research Planner	1198
		13	01	2.D.13	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.13	-2	Metal Free Casting Research Planner	1198
		13	01	2.D.13	-3	Metal Free Casting Research Planner	1198
		13	01	2.D.14		Metal Free Casting Research Planner	1198

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-9
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.3 Metallurgical Processes; Free Casting of Metals				MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
37	(Continued)	13	01	2.D.15		Metal Free Casting Research Planner	1198
		13	01	2.D.18		Metal Free Casting Research Planner	1198
		13	01	2.D.20		Metal Free Casting Research Planner	1198
		13	01	2.D.21	-2	Metal Free Casting Research Planner	1198
		13	01	3.I.04	-8	Metal Free Casting Research Planner	1198
		13	01	4.D.13		Metal Free Casting Research Planner	1198
		13	01	4.D.14		Metal Free Casting Research Planner	1198
		13	01	2.D.32		Metal Free Casting Research Planner	1198
		13	01	2.D.33		Metal Free Casting Research Planner	1198
		13	01	2.D.46		Metal Free Casting Research Planner	1198
		13	01	2.D.47		Metal Free Casting Research Planner	1198
		13	01	2.D.48		Metal Free Casting Research Planner	1198
		13	01	2.D.34		Metal Free Casting Research Planner	1198
		13	01	2.A.44		Metal Free Casting Research Planner	1198
		13	01	2.D.53		Metal Free Casting Research Planner	1198

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-10
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals							MISSION MODE: A
							BASIC FUNCTION: 06 Experiment Conduct
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.A.17	-7	Metal Free Casting Research Planner	1198
		13	01	2.A.43		Metal Free Casting Research Planner	1198
		13	01	2.D.21	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.52		Metal Free Casting Research Planner	1198
38	Define experiment conditions	13	01	2.C.23		Metal Free Casting Research Planner	1198
		13	01	2.D.13	-4	Metal Free Casting Research Planner	1198
		13	01	2.D.14		Metal Free Casting Research Planner	1198
		13	01	2.D.32		Metal Free Casting Research Planner	1198
		13	01	2.D.33		Metal Free Casting Research Planner	1198
		13	01	2.D.13	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.13	-2	Metal Free Casting Research Planner	1198
		13	01	2.D.13	-3	Metal Free Casting Research Planner	1198
		13	01	2.D.15		Metal Free Casting Research Planner	1198

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-06-11	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.3 Metallurgical Processes; Free Casting of Metals				MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	2.D.18		Metal Free Casting Research Planner	1198
		13	01	2.B.06	-1	Metal Free Casting Research Planner	1198
		13	01	2.B.06	-2	Metal Free Casting Research Planner	1198
		13	01	3.I.04	-8	Metal Free Casting Research Planner	1198
		13	01	4.D.13		Metal Free Casting Research Planner	1198
		13	01	2.D.24	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.24	-2	Metal Free Casting Research Planner	1198
		13	01	2.D.46		Metal Free Casting Research Planner	1198
		13	01	2.D.47		Metal Free Casting Research Planner	1198
		13	01	2.D.21	-1	Metal Free Casting Research Planner	1198
		13	01	2.D.21	-2	Metal Free Casting Research Planner	1198
		13	01	2.D.56		Metal Free Casting Research Planner	1198
		13	01	2.D.52		Metal Free Casting Research Planner	1198
		13	01	4.D.14		Metal Free Casting Research Planner	1198

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1
							PAGE	A-1.3-06-12
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:			MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
38	(Continued)	13	01	2.D.48		Metal Free Casting Research Planner	1198	
		13	01	2.D.34		Metal Free Casting Research Planner	1198	
		13	01	2.D.53		Metal Free Casting Research Planner	1198	
		13	01	2.D.20		Metal Free Casting Research Planner	1198	
		13	01	2.A.44		Metal Free Casting Research Planner	1198	
		13	01	2.A.17	-7	Metal Free Casting Research Planner	1198	
		13	01	2.A.04	-3	Metal Free Casting Research Planner	1198	
		13	01	2.A.43		Metal Free Casting Research Planner	1198	
39	Monitor experiment performance	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor	1141	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-06-13
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals		BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Liquid Metal Supply System Operation Monitor	1028
		01	01	2.D.14		Liquid Metal Supply System Operation Monitor	1028
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.D.24	-2	" " "	0985
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Plasma Beam Unit Operation Monitor	1272
		01	01	2.D.33		Plasma Beam Unit Operation Monitor	1272
		01	01	2.B.06	-2	Dispersion Control System Operation Monitor	1110
		01	01	2.D.18		Dispersion Control System Operation Monitor	1110
		01	01	2.B.06	-2	Liquid Sphere Deployment System Operation Monitor	1287

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-06-14
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.3. Metallurgical Processes; Free Casting of Metals		MISSION MODE: A				
BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
39	(Continued)	01	01	2.D.46	Liquid Sphere Deployment System Operation Monitor	1287
		01	01	2.B.06 -2	Hollow Bodies Deployment System Operation Monitor	1302
		01	01	2.D.47	Hollow Bodies Deployment System Operation Monitor	1302
		01	01	2.B.06 -2	Membrane Drawing Tool Operation Monitor	1317
		01	01	2.D.48	Membrane Drawing Tool Operation Monitor	1317
		01	01	2.B.06 -2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.B.06 -2	Chill System Operation Monitor	1074
		01	01	2.D.53	" " " "	1074
		01	01	2.B.06 -2	Camera Operation Monitor	1344
		01	01	2.A.17 -7	" " " "	1344
		01	01	2.B.06 -2	TV Camera Operation Monitor	1345
		01	01	2.A.04 -3	" " " "	1345
		01	01	2.B.06 -2	Holographic Device Operation Monitor	1228
		01	01	2.A.43	Holographic Device Operation Monitor	1228
		01	01	2.B.06 -2	Mixing Unit Operation Monitor	0999
		01	01	2.D.21 -1	" " " "	0999
		01	01	2.D.21 -2	" " " "	0999
		01	01	2.B.06 -2	Heating/Cooling Device Operation Monitor	1241

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-06-15
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
39	(Continued)	01	01	2.D.56		Heating/Cooling Device Operation Monitor 1241
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor 1099
		01	01	2.D.52		" " " " " 1099
		01	01	2.B.06	-2	Computer Operation Monitor 1055
		01	01	2.B.06	-1	" " " " " 1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor 1146
		01	01	4.D.14		Heat Rejection System Operation Monitor 1146
40	Evaluate experiment results	11	01	3.I.04	-8	Metal Free Casting Research Evaluator 1202
		11	01	2.C.23		Metal Free Casting Research Evaluator 1202
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller 0334
		10	01	4.A.01		Telemetry Equipment Controller 1104
		10	01	4.D.10		Data Recorder Controller 1157
		10	01	2.D.27		Materials Analysis Equipment Controller 1049
		10	01	4.A.02		Radio Communicator 0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-09-1	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & manufacturing in Space					
EXPERIMENT:		MISSION MODE: A					
1.3 Metallurgical Processes; Free Casting of Metals				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT	OPER. ENVIR.	DEPENDENCY		TASK - SKILL	
NO.	DESCRIPTION	NO.	NO.	NO.		TITLE	NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.14		Liquid Metal Supply System Cleaner	1027
		19	01	2.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	2.D.24	-2	" "	0984
		19	01	2.D.06		" "	0984
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.33		Plasma Beam Unit Cleaner	1337
		19	01	4.D.06		" " " "	1337
		19	01	2.D.18		Dispersion Control System Cleaner	1109
		19	01	4.D.06		" " " "	1109
		19	01	2.D.46		Liquid Sphere Deployment System Cleaner	1338
		19	01	4.D.06		Liquid Sphere Deployment System Cleaner	1338
		19	01	2.D.47		Hollow Bodies Deployment System Cleaner	1339
		19	01	4.D.06		Hollow Bodies Deployment System Cleaner	1339
		19	01	2.D.48		Membrane Drawing Tool Cleaner	1340
		19	01	4.D.06		" " " "	1340
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-09-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.3-09-3
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:		MISSION MODE: A					
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	21	01	2.D.14	Liquid Metal Supply System Disassembler	1029	
		20	01	2.D.14	Liquid Metal Supply System Assembler	1030	
		26	01	2.D.14	Liquid Metal Supply System Module Remover	1024	
		27	01	2.D.14	Liquid Metal Supply System Module Installer	1025	
		21	01	2.D.15	Atmosphere Supply/Control System Disassembler	1130	
		20	01	2.D.15	Atmosphere Supply/Control System Assembler	1131	
		26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127	
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128	
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137	
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138	
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134	
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135	
		21	01	2.D.24	Furnace Disassembler	0986	
		20	01	2.D.24	Furnace Assembler	0987	
		26	01	2.D.24	Furnace Module Remover	0981	
		27	01	2.D.24	Furnace Module Installer	0982	
		21	01	2.D.18	Dispersion Control System Disassembler	1111	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-09-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.53	Chill System Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21	Mixing Unit Disassembler	1000
		21	01	2.D.21	" " "	1000
		20	01	2.D.21	Mixing Unit Assembler	1001
		20	01	2.D.21	" " "	1001
		26	01	2.D.21	Mixing Unit Module Remover	0995
		26	01	2.D.21	" " " "	0995
		27	01	2.D.21	Mixing Unit Module Installer	0996
		27	01	2.D.21	" " " "	0996
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.B.06	Computer Disassembler	1056
		20	01	2.B.06	Computer Assembler	1057
		26	01	2.B.06	Computer Module Remover	0519
		27	01	2.B.06	Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.3-09-5
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals		MISSION MODE: A					
BASIC FUNCTION: 09 Scheduled Maintenance							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.24		Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.24		Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34		Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34		Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44		Viewing Device Disassembler	1224
		20	01	2.A.44		Viewing Device Assembler	1225
		26	01	2.A.44		Viewing Device Module Remover	1220
		27	01	2.A.44		Viewing Device Module Installer	1221
		21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.3-09-6
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals		MISSION MODE: A					
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.A.43		Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.56		Heating/Cooling Device Disassembler	1244
		20	01	2.D.56		Heating/Cooling Device Assembler	1243
		26	01	2.D.56		Heating/Cooling Device Module Remover	1248
		27	01	2.D.56		Heating/Cooling Device Module Installer	1247
		21	01	2.D.13	-4	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-4	Environmental Chamber Assembler	1064
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.24	-2	Furnace Disassembler	0986
		20	01	2.D.24	-2	Furnace Assembler	0987
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-2	Furnace Module Installer	0982
		21	01	2.D.32		Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32		Heating/Positioning Coil Assembler	1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.3-09-7
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:		1.3 Metallurgical Processes; Free Casting of Metals				MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	21	01	2.D.33	Plasma Beam Unit Disassembler	1275	
		20	01	2.D.33	Plasma Beam Unit Assembler	1274	
		26	01	2.D.33	Plasma Beam Unit Module Remover	1279	
		27	01	2.D.33	Plasma Beam Unit Module Installer	1278	
		21	01	2.D.46	Liquid Sphere Deployment System Disassembler	1290	
		20	01	2.D.46	Liquid Sphere Deployment System Assembler	1289	
		26	01	2.D.46	Liquid Sphere Deployment System Module Remover	1294	
		27	01	2.D.46	Liquid Sphere Deployment System Module Installer	1293	
		21	01	2.D.47	Hollow Bodies Deployment System Disassembler	1305	
		20	01	2.D.47	Hollow Bodies Deployment System Assembler	1304	
		26	01	2.D.47	Hollow Bodies Deployment System Module Remover	1309	
		27	01	2.D.47	Hollow Bodies Deployment System Module Installer	1308	
		21	01	2.D.48	Membrane Drawing Tool Disassembler	1320	
		20	01	2.D.48	Membrane Drawing Tool Assembler	1319	
		26	01	2.D.48	Membrane Drawing Tool Module Remover	1324	
		27	01	2.D.48	Membrane Drawing Tool Module Installer	1323	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	20	01	2.D.14	Liquid Metal Supply System Assembler	1030
		26	01	2.D.14	Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14	Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15	Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15	Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	Furnace Disassembler	0986
		20	01	2.D.24	Furnace Assembler	0987
		26	01	2.D.24	Furnace Module Remover	0981
		27	01	2.D.24	Furnace Module Installer	
		21	01	2.D.18	Dispersion Control System Disassembler	1111
		20	01	2.D.18	Dispersion Control System Assembler	1112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A
1.3 Metallurgical Processes: Free Casting of Metals				BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.53	Chill System Disassembler	1075
		20	01	2.D.53	Chill System Assembler	1076
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		21	01	2.D.21	Mixing Unit Disassembler	1000
		21	01	2.D.21	" " "	1000
		20	01	2.D.21	Mixing Unit Assembler	1001
		20	01	2.D.21	" " "	1001
		26	01	2.D.21	Mixing Unit Module Remover	0995
		26	01	2.D.21	" " " "	0995
		27	01	2.D.21	Mixing Unit Module Installer	0996
		27	01	2.D.21	" " " "	0996
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.D.34	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.34	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225
		26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.3-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.43	-3	Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.56		Heating/Cooling Device Disassembler	1244
		20	01	2.D.56		Heating/Cooling Device Assembler	1243
		26	01	2.D.56		Heating/Cooling Device Module Remover	1248
		27	01	2.D.56		Heating/Cooling Device Module Installer	1247
		21	01	2.D.13	-4	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-4	Environmental Chamber Assembler	1064
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.24	-2	Furnace Disassembler	0986
		20	01	2.D.24	-2	Furnace Assembler	0987
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-2	Furnace Module Installer	0982

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.3 Metallurgical Processes; Free Casting of Metals					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	21	01	2.D.32	Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32	Heating/Positioning Coil Assembler	1261
		26	01	2.D.32	Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32	Heating/Positioning Coil Module Installer	1265
		21	01	2.D.33	Plasma Beam Unit Disassembler	1275
		20	01	2.D.33	Plasma Beam Unit Assembler	1274
		26	01	2.D.33	Plasma Beam Unit Module Remover	1279
		27	01	2.D.33	Plasma Beam Unit Module Installer	1278
		21	01	2.D.46	Liquid Sphere Deployment System Disassembler	1290
		20	01	2.D.46	Liquid Sphere Deployment System Assembler	1289
		26	01	2.D.46	Liquid Sphere Deployment System Module Remover	1294
		27	01	2.D.46	Liquid Sphere Deployment System Module Installer	1293
		21	01	2.D.47	Hollow Bodies Deployment System Disassembler	1305
		20	01	2.D.47	Hollow Bodies Deployment System Assembler	1304
		26	01	2.D.47	Hollow Bodies Deployment System Module Remover	1309
		27	01	2.D.47	Hollow Bodies Deployment System Module Installer	1308
		21	01	2.D.48	Membrane Drawing Tool Disassembler	1320
		20	01	2.D.48	Membrane Drawing Tool Assembler	1319
		26	01	2.D.48	Membrane Drawing Tool Module Remover	1324

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1	
							PAGE	A-1.3-10-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals						BASIC FUNCTION: 10. Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
34	(Continued)	27	01	2.D.48		Membrane Drawing Tool Module Installer	1323		
		21	01	2.B.06	-1	Computer Disassembler	1056		
		20	01	2.B.06	-1	Computer Assembler	1057		
		26	01	2.B.06	-1	Computer Module Remover	0519		
		27	01	2.B.06	-1	Computer Module Installer	0520		
		21	01	4.D.14		Heat Rejection System Disassembler	1147		
		20	01	4.D.14		Heat Rejection System Assembler	1148		
		26	01	4.D.14		Heat Rejection System Module Remover	1143		
		27	01	4.D.14		Heat Rejection System Module Installer	1144		
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050		
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051		
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044		
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045		
		48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
07	01			2.D.13	-2	Environmental Chamber Fault Identifier	1066		
07	01			2.D.13	-3	Environmental Chamber Fault Identifier	1066		
07	01			4.C.02		Environmental Chamber Fault Identifier	1066		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.3-10-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-2	" " "	1065
		28	01	2.D.13	-3	" " "	1065
		07	01	2.D.14		Liquid Metal Supply System Fault Identifier	1032
		07	01	4.C.02		Liquid Metal Supply System Fault Identifier	1032
		28	01	2.D.14		Liquid Metal Supply System Repairer	1031
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24		Furnace Fault Identifier	0989
		07	01	4.C.02		" " "	0989
		28	01	2.D.24		Furnace Repairer	0988

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	2.D.18	Dispersion Control System Fault Identifier	1114
		07	01	4.C.02	Dispersion Control System Fault Identifier	1114
		28	01	2.D.18	Dispersion Control System Repairer	1113
		07	01	2.D.53	Chill System Fault Identifier	1078
		07	01	4.C.02	" " " "	1078
		28	01	2.D.53	Chill System Repairer	1077
		07	01	2.D.21	-1 Mixing Unit Fault Identifier	1003
		07	01	2.D.21	-2 " " " "	1003
		07	01	4.C.02	" " " "	1003
		28	01	2.D.21	-1 Mixing Unit Repairer	1002
		28	01	2.D.21	-2 " " " "	1002
		07	01	2.D.52	VHF Power Unit Fault Identifier	1103
		07	01	4.C.02	" " " " "	1103
		28	01	2.D.52	VHF Power Unit Repairer	1102
		07	01	2.B.06	-1 Computer Fault Identifier	0523
		07	01	4.C.02	" " " "	0523
		28	01	2.B.06	-1 Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150
		28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-9
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		07	01	2.D.13	-4 Environmental Chamber Fault Identifier	1066
		07	01	4.C.02	Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-4 Environmental Chamber Repairer	1065
		07	01	2.D.24	-2 Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24	-2 Furnace Repairer	0988
		07	01	2.D.32	Heating/Positioning Coil Fault Identifier	1264
		07	01	4.C.02	Heating/Positioning Coil Fault Identifier	1264
		28	01	2.D.32	Heating/Positioning Coil Repairer	1263
		07	01	2.D.33	Plasma Beam Unit Fault Identifier	1277
		07	01	4.C.02	" " " " "	1277
		28	01	2.D.33	Plasma Beam Unit Repairer	1276
		07	01	2.D.46	Liquid Sphere Deployment System Fault Identifier	1292
		07	01	4.C.02	Liquid Sphere Deployment System Fault Identifier	1292
		28	01	2.D.46	Liquid Sphere Deployment System Repairer	1291
		07	01	2.D.47	Hollow Bodies Deployment System Fault Identifier	1307
		07	01	4.C.02	Hollow Bodies Deployment System Fault Identifier	1307
		28	01	2.D.47	Hollow Bodies Deployment System Repairer	1306
		07	01	2.D.48	Membrane Drawing Tool Fault Identifier	1322

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.3-10-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A
1.3 Metallurgical Processes; Free Casting of Metals					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	4.C.02	Membrane Drawing Tool Fault Identifier	1322
		28	01	2.D.48	Membrane Drawing Tool Repairer	1321
		07	01	2.D.34	Atmosphere Analysis Unit Fault Identifier	1210
		07	01	4.C.02	Atmosphere Analysis Unit Fault Identifier	1210
		28	01	2.D.34	Atmosphere Analysis Unit Repairer	1211
		07	01	2.A.44	Viewing Device Fault Identifier	1222
		07	01	4.C.02	" " " "	1222
		28	01	2.A.44	Viewing Device Repairer	1223
		07	01	2.A.17	-7 Camera Fault Identifier	0886
		07	01	4.C.02	" " " "	0886
		28	01	2.A.17	-7 Camera Repairer	1195
		07	01	2.A.04	-3 TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689
		28	01	2.A.04	-3 TV Camera Repairer	0690
		07	01	2.A.43	Holographic Device Fault Identifier	1233
		07	01	4.C.02	Holographic Device Fault Identifier	1233
		28	01	2.A.43	Holographic Device Repairer	1232
		07	01	2.D.56	Heating/Cooling Device Fault Identifier	1246
		07	01	4.C.02	Heating/Cooling Device Fault Identifier	1246
		28	01	2.D.56	Heating/Cooling Device Repairer	1245

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Metallurgical Processes

1.4 Liquid Dispersions

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.4-04-1		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
1	Formulate selected materials slip	13	01	3.I.04	-9	Liquid Dispersion Research Planner	1346		
		13	01	2.C.23		" " " "	1346		
		10	01	2.C.23		Materials Slip Formulator	1347		
		10	01	2.D.21	-1	" " "	1347		
		10	01	2.D.21	-2	" " "	1347		
		10	01	2.D.14		" " "	1347		
		10	01	2.D.19		" " "	1347		
		10	01	3.I.04	-9	" " "	1347		
2	Store slip in suitable container	17	01	2.C.23		Materials Slip Stower	1348		
		17	01	3.I.04	-9	" " "	1348		
		17	01	2.D.25		" " "	1348		
3	Select mold of suitable complexity	13	01	2.C.23		Liquid Dispersion Research Planner	1346		
		13	01	3.I.04	-9	" " " "	1346		
		13	01	2.D.19	-1	" " " "	1346		
31	Set up experiment apparatus	18	01	2.C.23		Materials Sample Unstower	1354		
		22	01	2.C.23		Materials Sample Translocator	1355		
		27	01	2.C.23		Materials Sample Installer	1356		
		27	01	2.D.19		" " "	1356		
		18	01	2.D.13	-1	Environmental Chamber Unstower	1058		
		18	01	2.D.13	-2	" " "	1058		
		18	01	2.D.13	-3	" " "	1058		
		18	01	2.D.14		Liquid Metal Supply System	1023		
						Unstower			
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.4-04-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
31,	(Continued)	18	01	2.D.15	Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13	Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.24	Furnace Unstower	0980
		18	01	2.D.24	" " " "	0980
		18	01	2.D.17	Mold Injection System Unstower	1005
		18	01	2.D.18	Dispersion Control System Unstower	1105
		18	01	2.D.19	Materials Forming Equipment Unstower	1017
		22	01	2.D.19	Materials Forming Equipment Translocator	1018
		27	01	2.D.19	Materials Forming Equipment Installer	1016
		18	01	2.D.20	Internal Attachments Unstower	1152
		22	01	2.D.20	Internal Attachments Translocator	1153
		27	01	2.D.20	Internal Attachments Installer	1151
		18	01	2.D.53	Chill System Unstower	1068
		22	01	2.D.53	Chill System Translocator	1069
		27	01	2.D.53	Chill System Installer	1067
		18	01	2.D.21	Mixing Unit Unstower	0992
		18	01	2.D.21	" " " "	0992
		22	01	2.D.21	Mixing Unit Translocator	0993
		22	01	2.D.21	" " " "	0993
		27	01	2.D.21	Mixing Unit Installer	0991
		27	01	2.D.21	" " " "	0991
		18	01	2.D.50	Slip Cast Injection System Unstower	1116
		22	01	2.D.50	Slip Cast Injection System Translocator	1117

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	27	01	2.D.50		Slip Cast Injection System Installer	1115
		18	01	2.D.22		Vibrator Unstower	1080
		22	01	2.D.22		Vibrator Translocator	1081
		27	01	2.D.22		Vibrator Installer	1079
		18	01	2.D.52		VHF Power Unit Unstower	1092
		22	01	2.D.52		VHF Power Unit Translocator	1093
		27	01	2.D.52		VHF Power Unit Installer	1091
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	4.D.14		Heat Rejection Systems Unstower	1142
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.04	-9	" " "	0847
		15	01	3.I.04	-10	" " "	0847
		15	01	2.C.23		" " "	0847
		26	01	2.C.23		Materials Sample Remover	1357
		26	01	2.D.24		" " "	1357
		26	01	2.D.14		" " "	1357
		26	01	2.D.20		" " "	1357
		27	01	2.C.23		Materials Sample Installer	1356
		27	01	2.D.24	-1	" " "	1356
		27	01	2.D.14		" " "	1356
		27	01	2.D.20		" " "	1356
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-04-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.24	-1	Furnace Module Remover	0981
		26	01	2.D.24	-2	" " "	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		27	01	2.D.24	-2	" " "	0982
		26	01	2.D.17		Mold Injection System Module Remover	1006
		27	01	2.D.17		Mold Injection System Module Installer	1007

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-1.4-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		26	01	2.D.19 -1	Materials Forming Equipment Remover	1019
		26	01	2.D.19 -2	Materials Forming Equipment Remover	1019
		26	01	2.D.19 -3	Materials Forming Equipment Remover	1019
		27	01	2.D.19 -1	Materials Forming Equipment Installer	1016
		27	01	2.D.19 -2	Materials Forming Equipment Installer	1016
		27	01	2.D.19 -3	Materials Forming Equipment Installer	1016
		26	01	2.D.20	Internal Attachments Remover	1154
		27	01	2.D.20	Internal Attachments Installer	1151
		26	01	2.D.53	Chill System Remover	1070
		27	01	2.D.53	Chill System Installer	1067
		26	01	2.D.53	Chill System Module Remover	1071
		27	01	2.D.53	Chill System Module Installer	1072
		26	01	2.A.04 -3	TV Camera Remover	0661
		27	01	2.A.04 -3	TV Camera Installer	0306
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		26	01	2.D.21 -1	Mixing Unit Remover	0994
		26	01	2.D.21 -2	" " "	0994
		27	01	2.D.21 -1	Mixing Unit Installer	0991
		27	01	2.D.21 -2	" " "	0991

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.4-04-6		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions						BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
32	(Continued)	26	01	2.D.21	-1	Mixing Unit Module Remover	0995		
		26	01	2.D.21	-2	" " " "	0995		
		26	01	2.D.21	-3	" " " "	0995		
		27	01	2.D.21	-1	Mixing Unit Module Installer	0996		
		27	01	2.D.21	-2	" " " "	0996		
		27	01	2.D.21	-3	" " " "	0996		
		26	01	2.D.22		Vibrator Remover	1082		
		27	01	2.D.22		Vibrator Installer	1079		
		26	01	2.D.22		Vibrator Module Remover	1083		
		27	01	2.D.22		Vibrator Module Installer	1084		
		26	01	2.D.52		VHF Power Unit Remover	1094		
		27	01	2.D.52		VHF Power Unit Installer	1091		
		26	01	2.D.52		VHF Power Unit Module Remover	1095		
		27	01	2.D.52		VHF Power Unit Module Installer	1096		
		26	01	2.D.50		Slip Cast Injection System Remover	1118		
		27	01	2.D.50		Slip Cast Injection System Installer	1115		
		26	01	2.D.50		Slip Cast Injection System Module Remover	1119		
		27	01	2.D.50		Slip Cast Injection System Module Installer	1120		
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046		
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046		
		08	01	2.D.52		VHF Power Unit Calibrator	1097		
		08	01	4.C.01		" " " "	1097		
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.4-05-1		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 04 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
17	Remove materials from mold	26	01	2.C.23		Metal Slip Casting Remover		1358	
		26	01	2.D.19	-1	" " " "		1358	
		26	01	3.I.04	-9	" " " "		1358	
		26	01	2.C.24		Immiscible System Casting Remover		1362	
		26	01	2.D.19	-1	" " " "		1362	
		26	01	3.I.04	-10	" " " "		1362	
18	Store completed casting	17	01	2.C.23		Metal Slip Casting Stower		1359	
		17	01	2.D.25		" " " "		1359	
		17	01	2.C.24		Immiscible System Casting Stower		1360	
		17	01	2.D.25		" " " "		1360	
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner		1062	
		19	01	2.D.13	-2	" " " "		1062	
		19	01	2.D.13	-3	" " " "		1062	
		19	01	2.D.14		Liquid Metal Supply System Cleaner		1027	
		19	01	2.D.24	-1	Furnace Cleaner		0984	
		19	01	2.D.24	-2	" "		0984	
		19	01	2.D.17		Mold Injection System Cleaner		1009	
		19	01	2.D.18		Dispersion Control System Cleaner		1109	
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner		1021	
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner		1021	
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner		1021	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-05-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions			MISSION MODE: A				
							BASIC FUNCTION: 04 Experiment Shutdown
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.D.21	-1	Mixing Unit Cleaner	0998
		19	01	2.D.21	-2	" " "	0998
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.50		Slip Cast Injection System Cleaner	1361
		19	01	4.D.06		Slip Cast Injection System Cleaner	1361
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Environmental Chamber Cleaner	1062
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	4.D.06		Furnace Cleaner	0984
		19	01	4.D.06		Mold Injection System Cleaner	1009
		19	01	4.D.06		Dispersion Control System Cleaner	1109
		41	Communicate experiment results to earth	05	01	3.I.04	-9
05	01			4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						PAGE A-1.4-06-1	
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Thoroughly mix material slip	10	01	2.D.21	-1	Materials Slip Mixing Controller	1349
		10	01	2.D.21	-2	" " " "	1349
		10	01	3.I.04	-1	" " " "	1349
		10	01	2.C.23		" " " "	1349
		10	01	2.B.06	-2	" " " "	1349
5	Force slip into mold	10	01	2.C.23		Slip Cast Injection System Controller	1363
		10	01	2.D.50		Slip Cast Injection System Controller	1363
		10	01	3.I.04	-9	Slip Cast Injection System Controller	1363
		10	01	2.D.10	-1	Slip Cast Injection System Controller	1363
		10	01	2.B.06	-2	Slip Cast Injection System Controller	1363
6	Determine suitable casting time duration	13	01	3.I.04	-9	Liquid Dispersion Research Planner	1346
		13	01	2.C.23		Liquid Dispersion Research Planner	1346
		13	01	2.D.19		Liquid Dispersion Research Planner	1346
7	Open casting mold	10	01	2.D.19	-1	Materials Slip Mold Opener	1350
		10	01	3.I.04	-9	" " " "	1350

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.4-06-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT			CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
8	Strain (drain) excess slip from mold	26	01	2.D.19	-1	Materials Slip Excess Remover	1351		
		26	01	2.C.23		" " " "	1351		
		26	01	3.I.04	-9	" " " "	1351		
9	Dry the completed cast	02	01	2.C.23		Materials Slip Drying Observer	1352		
		02	01	3.I.04	-9	" " " "	1352		
10	Determine suitable drying time	13	01	3.I.04	-9	Liquid Dispersion Research Planner	1346		
		13	01	2.C.23		" " " "	1346		
		13	01	2.D.19		" " " "	1346		
12	Insert immiscible system mixtures into mold	10	01	2.C.24		Mold Injection System Controller	1364		
		10	01	2.D.17		" " " "	1364		
		10	01	2.D.10	-1	" " " "	1364		
		10	01	2.B.06	-2	" " " "	1364		
		10	01	3.I.04	-10	" " " "	1364		
13	Heat mold to requisite melting temperature	13	01	2.D.24	-1	Liquid Dispersion Research Planner	1346		
		13	01	2.D.24	-2	" " " "	1346		
		13	01	2.C.24		" " " "	1346		
		13	01	3.I.04		" " " "	1346		
		15	01	2.B.06	-2	Furnace Control Actuator	1175		
		15	01	2.D.24	-1	" " " "	1175		
		15	01	2.D.24	-2	" " " "	1175		
14	Disperse liquid materials	15	01	2.C.24		Dispersion Control System Control Actuator	1176		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	(Continued)	15	01	2.D.10	-1	Dispersion Control System Control Actuator	1176
		15	01	3.I.04	-10	Dispersion Control System Control Actuator	1176
		15	01	2.B.06	-2	Dispersion Control System Control Actuator	1176
		15	01	2.D.18		Dispersion Control System Control Actuator	1176
		15	01	2.D.24		Dispersion Control System Control Actuator	1176
		15	01	2.D.24	-2	Dispersion Control System Control Actuator	1176
15	Determine dispersion completion	13	01	2.C.24		Immiscible System Dispersion Determiner	1365
		13	01	3.I.04	-10	Immiscible System Dispersion Determiner	1365
		13	01	2.D.18		Immiscible System Dispersion Determiner	1365
		13	01	2.B.06		Immiscible System Dispersion Determiner	1365
16	Cool materials to room temperature	15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.C.24		Environmental Chamber Control Actuator	1173
		15	01	3.I.04	-10	Environmental Chamber Control Actuator	1173

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1	
							PAGE A-1.4-06-4	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space		
EXPERIMENT:						MISSION MODE: A		
1.4 Metallurgical Processes; Liquid Dispersions				BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
16	(Continued)	01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141	
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141	
		01	01	2.C.24		Environmental Chamber Operation Monitor	1141	
		01	01	3.I.04	-10	Environmental Chamber Operation Monitor	1141	
36	Schedule experiment runs	13	01	2.B.06	-1	Liquid Dispersion Research Planner	1346	
		13	01	2.B.06	-2	" " " "	1346	
		13	01	3.I.04	-9	" " " "	1346	
		13	01	3.I.04	-10	" " " "	1346	
37	Define apparatus configuration	13	01	2.D.24	-1	Liquid Dispersion Research Planner	1346	
		13	01	2.D.24	-2	" " " "	1346	
		13	01	2.B.06	-2	" " " "	1346	
		13	01	2.B.06	-1	" " " "	1346	
		13	01	2.C.23		" " " "	1346	
		13	01	2.C.24		" " " "	1346	
		13	01	2.D.53		" " " "	1346	
		13	01	2.D.21	-2	" " " "	1346	
		13	01	2.D.21	-1	" " " "	1346	
		13	01	2.D.13	-1	" " " "	1346	
		13	01	2.D.50		" " " "	1346	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-06-5	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.D.13	-2	Liquid Dispersion Research Planner	1346
		13	01	2.D.14		" " " "	1346
		13	01	2.D.15		" " " "	1346
		13	01	2.D.17		" " " "	1346
		13	01	2.D.18		" " " "	1346
		13	01	2.D.19		" " " "	1346
		13	01	2.D.20		" " " "	1346
		13	01	2.D.21	-1	" " " "	1346
		13	01	2.D.21	-2	" " " "	1346
		13	01	2.D.25		" " " "	1346
		13	01	2.D.27		" " " "	1346
		13	01	3.I.04	-9	" " " "	1346
		13	01	3.I.04	-10	" " " "	1346
		13	01	2.D.52		" " " "	1346
		13	01	4.B.08		" " " "	1346
		13	01	4.D.05		" " " "	1346
		13	01	4.D.13		" " " "	1346
		13	01	4.D.14		" " " "	1346
38	Define experiment conditions	13	01	2.D.19		Liquid Dispersion Research Planner	1346
		13	01	2.D.20		" " " "	1346
		13	01	2.D.22		" " " "	1346
		13	01	2.D.25		" " " "	1346
		13	01	2.D.27		" " " "	1346
		13	01	2.D.52		" " " "	1346
		13	01	4.B.08		" " " "	1346
		13	01	4.D.06		" " " "	1346

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-06-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	4.D.13		Liquid Dispersion Research Planner	1346
		13	01	4.D.14		" " " "	1346
		13	01	2.C.14	-6	" " " "	1346
		13	01	2.C.14	-7	" " " "	1346
		13	01	2.D.24	-1	" " " "	1346
		13	01	2.D.24	-2	" " " "	1346
		13	01	2.D.53		" " " "	1346
		13	01	2.D.13	-1	" " " "	1346
		13	01	2.D.13	-2	" " " "	1346
		13	01	2.D.13	-3	" " " "	1346
		13	01	2.D.15		" " " "	1346
		13	01	2.D.18		" " " "	1346
		13	01	2.B.05	-1	" " " "	1346
		13	01	2.B.05	-2	" " " "	1346
		13	01	3.I.04	-7	" " " "	1346
		13	01	2.D.21	-1	" " " "	1346
		13	01	2.D.21	-2	" " " "	1346
		13	01	2.D.50		" " " "	1346
		13	01	2.D.14		" " " "	1346
		13	01	2.D.17		" " " "	1346
39	Monitor experiment performance	01	01	2.B.05	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-1.4-06-7
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Liquid Metal Supply System Operation Monitor	1028
		01	01	2.D.14		Liquid Metal Supply System Operation Monitor	1028
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.05	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.D.24	-2	" " "	0985
		01	01	2.B.05	-2	Mold Injection System Operation Monitor	1010
		01	01	2.D.17		Mold Injection System Operation Monitor	1010
		01	01	2.B.06	-2	Dispersion Control System Operation Monitor	1110
		01	01	2.D.18		Dispersion Control System Operation Monitor	1110
		01	01	2.B.06	-2	Chill System Operation Monitor	1074
		01	01	2.D.53		" " " "	1074
		01	01	2.B.06	-2	Mixing Unit Operation Monitor	0999
		01	01	2.D.21	-1	" " " "	0999
		01	01	2.D.21	-2	" " " "	0999

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-06-8
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:						MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
30	(Continued)	01	01	2.B.06	-2	Vibrator Operation Monitor	1086
		01	01	2.D.22		" " "	1086
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " " "	1099
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Slip Cast Injection System Operation Monitor	1122
		01	01	2.D.50		Slip Cast Injection System Operation Monitor	1122
40	Evaluate experiment results	11	01	3.I.04	-9	Liquid Dispersion Research Evaluator	1353
		11	01	3.I.04	-10	Liquid Dispersion Research Evaluator	1353
		11	01	2.C.23		Liquid Dispersion Research Evaluator	1353
		11	01	2.C.24		Liquid Dispersion Research Evaluator	1353
47	Operate measuring, recording and transmission systems and equipment	10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1	
							PAGE A-1.4-06-9	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions			BASIC FUNCTION: 06 Experiment Conduct				MISSION MODE: A	
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
47	(Continued)		10	01	2.D.27	Materials Analysis Equipment Controller	1049	
			10	01	4.A.02	Radio Communicator	0206	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-09-2	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.D.50		Slip Cast Injection System Cleaner	1361
		19	01	4.D.06		Slip Cast Injection System Cleaner	1361
		19	01	2.C.23		Slip Cast Injection System Cleaner	1361
		19	01	2.C.23		Materials Forming Equipment Cleaner	1021
		19	01	2.C.24		Materials Forming Equipment Cleaner	1021
		19	01	2.D.21	-1	Mixing Unit Cleaner	0998
		19	01	2.D.21	-2	" " "	0998
		19	01	2.C.23		" " "	0998
		19	01	2.C.24		" " "	0998
		19	01	4.D.06		" " "	0998
		19	01	4.D.06		Environmental Chamber Cleaner	1062
		19	01	4.D.06		Liquid Metal Supply System Cleaner	1027
		19	01	4.D.06		Furnace Cleaner	0984
		19	01	4.D.06		Mold Injection System Cleaner	1009
		19	01	4.D.06		Dispersion Control System Cleaner	1109
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	2.C.23		Materials Analysis Equipment Cleaner	1048

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-09-3
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 Materials Science & Manufacturing in Space	
EXPERIMENT:						MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.C.24		Materials Analysis Equipment Cleaner	1048
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-09-4	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.14		Liquid Metal Supply System Disassembler	1029
		20	01	2.D.14		Liquid Metal Supply System Assembler	1030
		26	01	2.D.14		Liquid Metal Supply System Module Remover	1024
		27	01	2.D.14		Liquid Metal Supply System Module Installer	1025
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-09-5	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.D.24	-1	Furnace Disassembler	0986
		21	01	2.D.24	-2	" "	0986
		20	01	2.D.24	-1	Furnace Assembler	0987
		20	01	2.D.24	-2	" "	0987
		26	01	2.D.24	-1	Furnace Module Remover	0981
		26	01	2.D.24	-2	" " "	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		27	01	2.D.24	-2	" " "	0982
		21	01	2.D.17		Mold Injection System Disassembler	1011
		20	01	2.D.17		Mold Injection System Assembler	1012
		26	01	2.D.17		Mold Injection System Module Remover	1006
		27	01	2.D.17		Mold Injection System Module Installer	1007
		21	01	2.D.18		Dispersion Control System Disassembler	1111
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-09-6	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	21	01	2.D.50	Slip Cast Injection System Disassembler	1123	
		20	01	2.D.50	Slip Cast Injection System Assembler	1124	
		26	01	2.D.50	Slip Cast Injection System Module Remover	1119	
		27	01	2.D.50	Slip Cast Injection System Module Installer	1120	
		21	01	2.D.22	Vibrator Disassembler	1087	
		20	01	2.D.22	Vibrator Assembler	1088	
		26	01	2.D.22	Vibrator Module Remover	1083	
		27	01	2.D.22	Vibrator Module Installer	1084	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 1.4 Metallurgical Processes; Liquid Dispersions						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.04		" "	0206
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-1.4-10-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions						BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
34	(Continued)	27	01	2.D.13	-3	Environmental Chamber Module Installer		1060	
		21	01	2.D.14		Liquid Metal Supply System Disassembler		1029	
		20	01	2.D.14		Liquid Metal Supply System Assembler		1030	
		26	01	2.D.14		Liquid Metal Supply System Module Remover		1024	
		27	01	2.D.14		Liquid Metal Supply System Module Installer		1025	
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler		1130	
		20	01	2.D.15		Atmosphere Supply/Control System Assembler		1131	
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover		1127	
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer		1128	
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler		1137	
		20	01	4.D.13		Power Conditioning/Distribution System Assembler		1138	
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover		1143	
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer		1135	
		21	01	2.D.24	-1	Furnace Disassembler		0986	
		21	01	2.D.24	-2	" "		0986	
		20	01	2.D.24	-1	Furnace Assembler		0987	
		20	01	2.D.24	-2	" "		0987	
		26	01	2.D.24	-1	Furnace Module Remover		0981	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1		
						PAGE A-1.4-10-3		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:			MISSION MODE: A					
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
34	(Continued)	27	01	2.D.24	-1	Furnace Module Installer		0982
		27	01	2.D.24	-2	" " "		0982
		21	01	2.D.17		Mold Injection System Disassembler		1011
		20	01	2.D.17		Mold Injection System Assembler		1012
		26	01	2.D.17		Mold Injection System Module Remover		1006
		27	01	2.D.17		Mold Injection System Module Installer		1007
		21	01	2.D.18		Dispersion Control System Disassembler		1111
		20	01	2.D.18		Dispersion Control System Assembler		1112
		26	01	2.D.18		Dispersion Control System Module Remover		1106
		27	01	2.D.18		Dispersion Control System Module Installer		1108
		21	01	2.D.53		Chill System Disassembler		1075
		20	01	2.D.53		Chill System Assembler		1076
		26	01	2.D.53		Chill System Module Remover		1071
		27	01	2.D.53		Chill System Module Installer		1072
		21	01	2.D.21	-1	Mixing Unit Disassembler		1000
		21	01	2.D.21	-2	" " "		1000
		20	01	2.D.21	-1	Mixing Unit Assembler		1001
		20	01	2.D.21	-2	" " "		1001
		26	01	2.D.21	-1	Mixing Unit Module Remover		0995
		26	01	2.D.21	-2	" " " "		0995
		27	01	2.D.21	-1	Mixing Unit Module Installer		0996
		27	01	2.D.21	-2	" " " "		0996
		21	01	2.D.22		Vibrator Disassembler		1087
		20	01	2.D.22		Vibrator Assembler		1088
		26	01	2.D.22		Vibrator Module Remover		1083

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-10-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	27	01	2.D.22		Vibrator Module Installer	1084
		21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.50		Slip Cast Injection System Disassembler	1123
		20	01	2.D.50		Slip Cast Injection System Assembler	1124
		26	01	2.D.50		Slip Cast Injection System Module Remover	1119

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-1.4-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.D.50		Slip Cast Injection System Module Installer	1120
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-2	" " "	1065
		28	01	2.D.13	-3	" " "	1065
		07	01	2.D.14		Liquid Metal Supply System Fault Identifier	1032
		07	01	4.C.02		Liquid Metal Supply System Fault Identifier	1032
		28	01	2.D.14		Liquid Metal Supply System Repairer	1031
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1
							PAGE	A-1,4-10-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
48	(Continued)	07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140	
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140	
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139	
		07	01	2.D.24	-1	Furnace Fault Identifier	0989	
		07	01	4.C.02		" " "	0989	
		28	01	2.D.24	-1	Furnace Repairer	0988	
		07	01	2.D.17		Mold Injection System Fault Identifier	1014	
		07	01	4.C.02		Mold Injection System Fault Identifier	1014	
		28	01	2.D.17		Mold Injection System Repairer	1013	
		07	01	2.D.18		Dispersion Control System Fault Identifier	1114	
		07	01	4.C.02		Dispersion Control System Fault Identifier	1114	
		28	01	2.D.18		Dispersion Control System Repairer	1113	
		07	01	2.D.53		Chill System Fault Identifier	1078	
		07	01	4.C.02		" " " "	1078	
		28	01	2.D.53		Chill System Repairer	1077	
		07	01	2.D.21	-1	Mixing Unit Fault Identifier	1003	
		07	01	2.D.21	-2	" " " "	1003	
		07	01	4.C.02		" " " "	1003	
		28	01	2.D.21	-1	Mixing Unit Repairer	1002	
		28	01	2.D.21		" " " "	1002	
07	01	2.D.22		Vibrator Fault Identifier	1090			
07	01	4.C.02		" " " "	1090			
28	01	2.D.22		Vibrator Repairer	1089			

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-1.4-10-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
1.4 Metallurgical Processes; Liquid Dispersions					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	07	01	2.D.52		VHF Power Unit Fault Identifier	1103
		07	01	4.C.02		" " " " "	1103
		28	01	2.D.52		VHF Power Unit Repairer	1102
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540
		07	01	4.D.14		Heat Rejection System Fault Identifier	1150
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150
		28	01	4.D.14		Heat Rejection System Repairer	1149
		07	01	2.D.27		Materials Analysis Engineering Fault Identifier	1053
		07	01	4.C.02		Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07		Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27		Materials Analysis Equipment Repairer	1052
		07	01	2.D.24	-2	Furnace Fault Identifier	0989
		07	01	4.C.02		" " "	0989
		28	01	2.D.24	-2	Furnace Repairer	0988
		07	01	2.D.50		Slip Cast Injection System Fault Identifier	1126
		07	01	4.C.02		Slip Cast Injection System Fault Identifier	1126
		28	01	2.D.50		Slip Cast Injection System Repairer	1125
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Crystal Growth

2.1 Crystal Growth from Solution

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Activate the experiment unit	15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-1	" " "	1175
2	Place sample in sample holder	27	01	2.C.25		Materials Sample Installer	1356
		27	01	2.D.19	-3	" " "	1356
3	Emplace sample holder in experiment unit	27	01	2.D.19	-3	Sample Holder Installer	1366
		27	01	2.C.25		" " "	1366
		27	01	2.D.24	-1	" " "	1366
5	Determine temperature needed for experiment	13	01	3.I.05	-1	Crystal Growth Research Planner	1367
		13	01	2.C.25		" " " "	1367
		13	01	2.D.24	-1	" " " "	1367
		13	01	2.D.13	-1	" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
8	Program temperature controller for cooling	10	01	2.B.06	-1	Computer Program Controller	0610
		10	01	3.I.05	-1	" " "	0610
		10	01	2.B.06	-2	" " "	0610
		10	01	2.D.13	-1	" " "	0610
		10	01	2.D.13	-2	" " "	0610
		10	01	2.D.24	-1	" " "	0610
		10	01	2.C.25		" " "	0610
		10	01	4.D.14		" " "	0610

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.1-04-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION:			04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE			NO.
11	Set up photographic coverage	18	01	2.A.17	-7	Camera Unstower	0292		
		22	01	2.A.17	-7	Camera Translocator	1226		
		27	01	2.A.17	-7	Camera Installer	0039		
		27	01	2.D.13	-1	" "	0039		
		27	01	2.D.13	-2	" "	0039		
		27	01	3.I.05	-1	" "	0039		
25	Adjust conditions for next experiment per results of previous experiments	13	01	3.I.05	-1	Crystal Growth Research Planner	1367		
		13	01	2.C.25		" " " "	1367		
		13	01	2.D.13	-1	" " " "	1367		
		13	01	2.D.13	-2	" " " "	1367		
		13	01	2.B.06	-2	" " " "	1367		
		13	01	2.D.15		" " " "	1367		
		13	01	4.D.13		" " " "	1367		
		13	01	2.D.24	-1	" " " "	1367		
		13	01	2.D.45		" " " "	1367		
		13	01	2.D.47		" " " "	1367		
		13	01	2.D.19		" " " "	1367		
		13	01	2.D.20		" " " "	1367		
		13	01	2.B.06	-1	" " " "	1367		
		13	01	4.D.14		" " " "	1367		
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173		
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173		
		15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173		
		15	01	3.I.05	-1	Environmental Chamber Control Actuator	1173		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-04-3	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
25	(Continued)	15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	3.I.05	-1	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	3.I.05	-1	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-1	" " "	1175
		15	01	3.I.05	-1	" " "	1175
		15	01	2.B.06	-2	Silicate Melt Susceptor Control Actuator	1372
		15	01	2.D.45		Silicate Melt Susceptor Control Actuator	1372
		15	01	3.I.05	-1	Silicate Melt Susceptor Control Actuator	1372
		15	01	2.B.06	-2	Seed Injector Control Actuator	1380
		15	01	2.D.47		" " " "	1380
		15	01	3.I.05	-1	" " " "	1380
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184
		15	01	3.I.05	-1	Heat Rejection System Control Actuator	1184

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-04-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
2.1 Crystal Growth; Crystal Growth from Solution			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	Set up experiment apparatus	18	01	2.D.13	-1	Environmental Chamber Unstower	1058
		18	01	2.D.13	-2	" " "	1058
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.24	-1	Furnace Unstower	0980
		18	01	2.D.45		Silicate Melt Susceptor Unstower	1373
		22		2.D.45		Silicate Melt Susceptor Translocator	1374
		27	01	2.D.45		Silicate Melt Susceptor Installer	1375
		18	01	2.D.47		Seed Injector Unstower	1381
		22	01	2.D.47		Seed Injector Translocator	1382
		27	01	2.D.47		Seed Injector Installer	1383
		18	01	2.D.19		Materials Forming Equipment Unstower	1017
		22	01	2.D.19		Materials Forming Equipment Translocator	1018
		27	01	2.D.19		Materials Forming Equipment Installer	1016
		18	01	2.D.20		Internal Attachments Unstower	1152
		22	01	2.D.20		Internal Attachments Translocator	1153
		27	01	2.D.20		Internal Attachments Installer	1151
		18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	4.D.14		Heat Rejection System Unstower	1142

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution							MISSION MODE: A
							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.05	-1	" " "	0847
		15	01	2.C.25		" " "	0847
		26	01	2.C.25		Materials Sample Remover	1357
		27	01	2.C.25		Materials Sample Installer	1356
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution Module Installer	1135
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24		Furnace Module Installer	0982
		26	01	2.D.45		Silicate Melt Susceptor Remover	1376

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-04-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.D.45		Silicate Melt Susceptor Installer	1375
		26	01	2.D.45		Silicate Melt Susceptor Module Remover	1377
		27	01	2.D.45		Silicate Melt Susceptor Module Installer	1378
		26	01	2.D.47		Seed Injector Remover	1384
		27	01	2.D.47		Seed Injector Installer	1383
		26	01	2.D.47		Seed Injector Module Remover	1385
		27	01	2.D.47		Seed Injector Module Installer	1386
		26	01	2.D.19	-1	Materials Forming Equipment Remover	1019
		26	01	2.D.19	-2	Materials Forming Equipment Remover	1019
		26	01	2.D.19	-3	Materials Forming Equipment Remover	1019
		27	01	2.D.19	-1	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-2	Materials Forming Equipment Installer	1016
		27	01	2.D.19	-3	Materials Forming Equipment Installer	1016
		26	01	2.D.20		Internal Attachments Remover	1154
		27	01	2.D.20		Internal Attachments Installer	1151
		26	01	2.A.17	-7	Camera Remover	0314
		27	01	2.A.17	-7	Camera Installer	0039
		26	01	2.A.04	-3	TV Camera Remover	0661
		27	01	2.A.04	-3	TV Camera Installer	0306
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-04-7
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:							MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
35	(Continued)	08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
42	Install movie cameras	18	01	2.A.17	-7	Camera Unstower	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		27	01	2.A.17	-7	Camera Installer	0039
43	Install TV Cameras	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156
49	Install optical instrumentation and measuring devices	27	01	2.D.27		Materials Analysis Equipment Installer	1040
		27	01	2.A.17	-17	Camera Installer	0039
		27	01	2.A.04	-3	TV Camera Installer	0306

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
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DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	Store crystals for return to earth	17	01	2.C.25		Materials Sample Stower	1371
		17	01	2.D.25		" " "	1371
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	4.D.06		" "	0984
		19	01	2.D.45		Silicate Melt Susceptor Cleaner	1379
		19	01	4.D.06		" " " "	1379
		19	01	2.D.47		Seed Injector Cleaner	1387
		19	01	4.D.06		" " "	1387
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
		19	01	2.A.17	-7	Camera Lens Cleaner	0097
		19	01	4.D.06		" " "	0097
		19	01	2.A.04	-3	TV Camera Optics Cleaner	0096
		19	01	4.D.06		" " " "	0096
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-05-2	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
41	Communicate experiment results to earth	05 05	01 01	3.I.05 4.A.02	-1	Radio Communicator " "	0206 0206
44	Develop film; make prints	06 06 06 06	01 01 01 01	2.A.27 4.B.08 2.A.27 4.B.08		Film developer " " Photograph Printer Controller " " "	0328 0328 1159 1159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Add dopant to liquid solution samples	27	01	2.C.25	-1	Materials Dopant Installer	1370
		27	01	2.D.47		" " "	1370
		27	01	3.I.05		" " "	1370
6	Activate heating unit	15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24		" " "	1175
7	Monitor heating process	01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24		" " "	0985
9	Add seed to melt before cooling	27	01	2.C.25	-1	Materials Dopant Installer	1370
		27	01	2.D.47		" " "	1370
		27	01	3.I.05		" " "	1370
10	Initiate cooling process	16	01	2.B.06	-2	Furnace Control Deactuator	1400
		16	01	2.D.24		" " "	1400
12	Activate photographic coverage	15	01	2.B.06	-2	Camera Control Actuator	0245
		15	01	2.A.17	-7	" " "	0245
13	Monitor cooling process	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	Observe cooling process and crystal formation	02	01	2.C.25		Crystal Growth Observer	1368
		02	01	3.I.05	-1	" " "	1368
		02	01	2.A.04	-3	" " "	1368
		02	01	2.B.06	-2	" " "	1368
15	Determine crystal growth completion	02	01	2.C.25		Crystal Growth Observer	1368
		02	01	3.I.05	-1	" " "	1368
		02	01	2.A.04	-3	" " "	1368
		02	01	2.B.06	-2	" " "	1368
		11	01	2.C.25		Crystal Growth Process Evaluator	1369
		11	01	3.I.05	-1	" " " "	1369
16	Acquire real time temperature measurements	02	01	2.B.06	-2	Temperature Measurement Observer	0360
		02	01	2.D.13	-1	" " "	0360
		02	01	2.D.13	-2	" " "	0360
		02	01	2.D.24		" " "	0360
		02	01	5.D.		" " "	0360
		15	01	2.B.06	-2	Data Recorder Control Actuator	1399
		15	01	4.D.10		" " " "	1399
17	Obtain hourly temperature measure- ments	02	01	2.B.06	-2	Temperature Measurement Observer	0360
		02	01	2.D.13	-1	" " "	0360
		02	01	2.D.13	-2	" " "	0360
		02	01	2.D.24		" " "	0360
		02	01	5.D		" " "	0360
		10	01	4.D.08		Temperature Measurement Recorder	0361
		10	01	5.D		" " "	0361

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	Remove crucible/sample holder from furnace	26	01	2.D.19		Materials Forming Equipment Remover	1019
		26	01	2.C.25		Materials Forming Equipment Remover	1019
		26	01	2.D.24	-1	Materials Forming Equipment Remover	1019
19	Dissolve glassy matrix around crystal	27	01	2.C.05	-5	Silicate Solvent Applier	1398
		27	01	2.C.25		" " "	1398
		27	01	3.I.05	-1	" " "	1398
		27	01	2.D.19		" " "	1398
20	Conduct physical evaluation of crystal	11	01	2.C.25		Crystal Growth Research Evaluator	1394
		11	01	2.D.27		" " " "	1394
		11	01	3.I.05	-1	" " " "	1394
21	Conduct electrical evaluation of crystal	11	01	2.C.25		Crystal Growth Research Evaluator	1394
		11	01	2.D.27		" " " "	1394
		11	01	3.I.05	-1	" " " "	1394
23	Conduct X-ray evaluation of crystal	11	01	2.C.25		Crystal Growth Research Evaluator	1394
		11	01	2.D.27		" " " "	1394
		11	01	2.A.36		" " " "	1394
		11	01	3.I.05	-1	" " " "	1394

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.1-06-4		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
36	Schedule experiment runs	13	01	3.I.05	-1	Crystal Growth Research Planner		1367	
		13	01	2.C.25		"	"	"	1367
		13	01	2.B.06	-1	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	1367
37	Define apparatus configuration	13	01	3.I.05	-1	Crystal Growth Research Planner		1367	
		13	01	2.C.25		"	"	"	1367
		13	01	2.D.13	-1	"	"	"	1367
		13	01	2.D.13	-2	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	1367
		13	01	2.D.15		"	"	"	1367
		13	01	4.D.13		"	"	"	1367
		13	01	2.D.24	-1	"	"	"	1367
		13	01	2.D.45		"	"	"	1367
		13	01	2.D.47		"	"	"	1367
		13	01	2.D.19		"	"	"	1367
		13	01	2.D.20		"	"	"	1367
		13	01	2.A.17	-7	"	"	"	1367
		13	01	2.A.04	-3	"	"	"	1367
		13	01	2.B.06	-1	"	"	"	1367
		13	01	4.D.14		"	"	"	1367
38	Define experiment conditions	13	01	3.I.05	-1	Crystal Growth Research Planner		1367	
		13	01	2.C.25		"	"	"	1367
		13	01	2.D.13	-1	"	"	"	1367
		13	01	2.D.13	-2	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	1367
		13	01	2.D.15		"	"	"	1367

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.1-06-5		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
2.1 Crystal Growth; Crystal Growth from Solution			BASIC FUNCTION: 06 Experiment Conduct						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			NO.
NO.	DESCRIPTION					TITLE			
38	(Continued)	13	01	4.D.13	-1	Crystal Growth Research Planner			1367
		13	01	2.D.24		" " " "	1367		
		13	01	2.D.45		" " " "	1367		
		13	01	2.D.47		" " " "	1367		
		13	01	2.D.19		" " " "	1367		
		13	01	2.D.20	" " " "	1367			
		13	01	2.A.17	-7	" " " "	1367		
		13	01	2.A.04	-3	" " " "	1367		
		13	01	2.B.06	-1	" " " "	1367		
		13	01	4.D.14		" " " "	1367		
39	Monitor experiment performance	01	01	2.B.06	-2	Environmental Chamber Operation Monitor			1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor			1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor			1141
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor			1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor			1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor			1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor			1136
		01	01	2.B.06	-2	Furnace Operation Monitor			0985
		01	01	2.D.24	-1	" " " "	0985		
		01	01	2.B.06	-2	Silicate Melt Susceptor Operation Monitor			1401

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-06-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
39	(Continued)	01	01	2.D.45		Silicate Melt Susceptor Operation Monitor	1401
		01	01	2.B.06	-2	Seed Injector Operation Monitor	1388
		01	01	2.D.47		" " " "	1388
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
40	Evaluate experiment results	11	01	2.C.25		Crystal Growth Research Evaluator	1394
		11	01	3.I.05	-1	" " " "	1394
47	Operate measuring, recording, and transmission systems and equipment	10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGEA-2.1-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.24	-1	Furnace Cleaner	0984
		19	01	4.D.06		" "	0984
		19	01	2.D.45		Silicate Melt Susceptor Cleaner	1379
		19	01	4.D.06		" " " "	1379
		19	01	2.D.47		Seed Injector Cleaner	1387
		19	01	4.D.06		" " "	1387
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner	1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
		19	01	2.A.17	-7	Camera Lens Cleaner	0097
		19	01	4.D.06		" " "	0097
		19	01	2.A.04	-3	TV Camera Optics Cleaner	0096
		19	01	4.D.06		" " " "	0096
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
34	Maintain experiment equipment	21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-09-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.1-09-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution					MISSION MODE: A	
					BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1143
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1 Furnace Disassembler	0986
		20	01	2.D.24	-1 Furnace Assembler	0987
		26	01	2.D.24	-1 Furnace Module Remover	0981
		27	01	2.D.24	-1 Furnace Module Installer	0982
		21	01	2.B.06	-1 Computer Disassembler	1056
		20	01	2.B.06	-1 Computer Assembler	1057
		26	01	2.B.06	-1 Computer Module Remover	0519
		27	01	2.B.06	-1 Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		21	01	2.D.27	Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27	Materials Analysis Equipment Assembler	1051
		26	01	2.D.27	Materials Analysis Equipment Module Remover	1044

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-09-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.1 Crystal Growth; Crystal Growth from Solution						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	27	01	2.D.27	Materials Analysis Equipment Module Installer	1045	
		21	01	2.D.45	Silicate Melt Susceptor Disassembler	1402	
		20	01	2.D.45	Silicate Melt Susceptor Assembler	1403	
		26	01	2.D.45	Silicate Melt Susceptor Module Remover	1377	
		27	01	2.D.45	Silicate Melt Susceptor Module Installer	1378	
		21	01	2.D.47	Seed Injector Disassembler	1389	
		20	01	2.D.47	Seed Injector Assembler	1390	
		26	01	2.D.47	Seed Injector Module Remover	1385	
		27	01	2.D.47	Seed Injector Module Installer	1386	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.1-10-1
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT:		MISSION MODE: A				
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner 1062
		19	01	2.D.13	-2	" " " 1062
		19	01	4.D.06		" " " 1062
		19	01	2.D.24	-1	Furnace Cleaner 0984
		19	01	4.D.06		" " " 0984
		19	01	2.D.45		Silicate Melt Susceptor Cleaner 1379
		19	01	4.D.06		" " " " 1379
		19	01	2.D.47		Seed Injector Cleaner 1387
		19	01	4.D.06		" " " 1387
		19	01	2.D.19	-1	Materials Forming Equipment Cleaner 1021
		19	01	2.D.19	-2	Materials Forming Equipment Cleaner 1021
		19	01	2.D.19	-3	Materials Forming Equipment Cleaner 1021
		19	01	4.D.06		Materials Forming Equipment Cleaner 1021
		19	01	2.A.17	-7	Camera Lens Cleaner 0097
		19	01	4.D.06		" " " 0097
		19	01	2.A.04	-3	TV Camera Optics Cleaner 0096
		19	01	4.D.06		" " " " 0096
		19	01	2.D.27		Materials Analysis Equipment Cleaner 1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner 1048
34	Maintain experiment equipment	21	01	2.A.04	-3	TV Camera Disassembler 0900
		20	01	2.A.04	-3	TV Camera Assembler 0901

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-10-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.1-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing In Space			
EXPERIMENT:						MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution			BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	20	01	2.D.15	Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1143
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1 Furnace Disassembler	0986
		20	01	2.D.24	-1 Furnace Assembler	0987
		26	01	2.D.24	-1 Furnace Module Remover	0981
		27	01	2.D.24	-1 Furnace Module Installer	0982
		21	01	2.B.06	-1 Computer Disassembler	1056
		20	01	2.B.06	-1 Computer Assembler	1057
		26	01	2.B.06	-1 Computer Module Remover	0519
		27	01	2.B.06	-1 Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.1-10-4
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A
2.1 Crystal Growth; Crystal Growth from Solution					BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.45		Silicate Melt Susceptor Disassembler	1402
		20	01	2.D.45		Silicate Melt Susceptor Assembler	1403
		26	01	2.D.45		Silicate Melt Susceptor Module Remover	1377
		27	01	2.D.45		Silicate Melt Susceptor Module Installer	1378
		21	01	2.D.47		Seed Injection Disassembler	1389
		20	01	2.D.47		Seed Injection Assembler	1390
		26	01	2.D.47		Seed Injection Module Remover	1385
		27	01	2.D.47		Seed Injection Module Installer	1386
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-2	" " "	1065

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.1-10-5
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT:						MISSION MODE: A	
2.1 Crystal Growth; Crystal Growth from Solution						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24	-1	Furnace Fault Identifier	0989
		07	01	4.C.02		" " "	0989
		28	01	2.D.24	-1	Furnace Repairer	0988
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540
		07	01	4.D.14		Heat Rejection System Fault Identifier	1150
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150
		28	01	4.D.14		Heat Rejection System Repairer	1149

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.1-10-6	
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 - Materials Science & Manufacturing in Space	
EXPERIMENT:						MISSION MODE: A	
2.1 Crystal Growth; Crystal Growth from Solution				BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053	
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053	
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053	
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052	
		07	01	2.D.45	Silicate Melt Susceptor Fault Identifier	1395	
		07	01	4.C.02	Silicate Melt Susceptor Fault Identifier	1395	
		07	01	4.C.07	Silicate Melt Susceptor Fault Identifier	1395	
		28	01	2.D.45	Silicate Melt Susceptor Repairer	1396	
		07	01	2.D.47	Seed Injector Fault Identifier	1391	
		07	01	4.C.02	" " " "	1391	
		07	01	4.C.07	" " " "	1391	
		28	01	2.D.47	Seed Injector Repairer	1392	
		07	01	2.A.17	-7 Camera Fault Identifier	0886	
		07	01	4.C.02	" " " "	0886	
		07	01	4.C.07	" " " "	0886	
		28	01	2.A.17	-7 Camera Repairer	1195	
		07	01	2.A.04	-3 TV Camera Fault Identifier	0689	
		07	01	4.C.02	" " " "	0689	
		07	01	4.C.07	" " " "	0689	
		28	01	2.A.04	-3 TV Camera Repairer	0690	

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DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Crystal Growth

2.2 Single Crystal Growth from Melts

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-04-1	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing In Space						MISSION MODE: A	
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Adjust conditions for next experiment run per results of previous experiment run	13	01	3.I.05	-2	Crystal Growth Research Planner	1367
		13	01	2.C.25		" " " "	1367
		13	01	2.D.13	-1	" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.D.13	-4	" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	4.D.13		" " " "	1367
		13	01	2.D.32		" " " "	1367
		13	01	2.D.29		" " " "	1367
		13	01	2.D.49		" " " "	1367
		13	01	2.D.20		" " " "	1367
		13	01	2.D.34		" " " "	1367
		13	01	2.A.44		" " " "	1367
		13	01	2.A.17	-7	" " " "	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.A.43		" " " "	1367
		13	01	2.D.56		" " " "	1367
		13	01	2.D.51		" " " "	1367
		13	01	2.D.52		" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	4.D.14		" " " "	1367
		13	01	2.D.27		" " " "	1367
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-04-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing In Space				
EXPERIMENT:							MISSION MODE: A
2.2 Crystal Growth; Single Crystal Growth from Melts			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-4	Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
		15	01	2.B.06	-2	Zone Melter Control Actuator	1405
		15	01	2.D.29		" " " "	1405
		15	01	2.B.06		Crystal Puller Control Actuator	1415
		15	01	2.D.49		" " " "	1415
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1214
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1214
		15	01	2.B.06	-2	Camera Control Actuator	0245
		15	01	2.A.17	-7	" " "	0245

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-04-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	2.B.06	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	Heating/Cooling Device Control Actuator	1242
		15	01	2.D.56		Heating/Cooling Device Control Actuator	1242
		15	01	2.B.06	-2	Zone Refiner Control Actuator	1425
		15	01	2.D.51		" " " "	1425
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183
		15	01	2.D.52		" " " "	1183
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " " "	0847
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184
9	Insert selected test cell into holder assembly	27	01	2.D.57		Test Cell Installer	1446
		27	01	2.D.32		" " "	1446
10	Manually program heat sources	15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-04-4
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A
2.2 Crystal Growth; Single Crystal Growth from Melts					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	(Continued)	15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
		15	01	2.B.06	-1	Heating/Positioning Coil Control Actuator	1260
		15	01	3.I.05	-2	Heating/Positioning Coil Control Actuator	1260
13	Place silicon bar in furnace	27	01	2.C.25		Materials Sample Installer	1356
		27	01	2.D.29		" " "	1356
31	Set up experiment apparatus	18	01	2.D.13	-1	Environmental Chamber Unstower	1058
		18	01	2.D.13	-2	" " "	1058
		18	01	2.D.13	-3	" " "	1058
		18	01	2.D.13	-4	" " "	1058
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.32		Heating/Positioning Coil Unstower	1271
		22	01	2.D.32		Heating/Positioning Coil Translocator	1270
		27	01	2.D.32		Heating/Positioning Coil Installer	1269
		18	01	2.D.29		Zone Melter Unstower	1406

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-04-5
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A
2.2 Crystal Growth; Single Crystal Growth from Melts		BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
31	(Continued)	22	01	2.D.29		Zone Melter Translocator 1407
		27	01	2.D.29		Zone Melter Installer 1408
		18	01	2.D.49		Crystal Puller Unstower 1416
		22	01	2.D.49		Crystal Puller Translocator 1417
		27	01	2.D.49		Crystal Puller Installer 1418
		18	01	2.D.20		Internal Attachments Unstower 1152
		22	01	2.D.20		Internal Attachments Translocator 1153
		27	01	2.D.20		Internal Attachments Installer 1151
		18	01	2.D.34		Atmosphere Analysis Unit Unstower 1203
		22	01	2.D.34		Atmosphere Analysis Unit Translocator 1204
		27	01	2.D.34		Atmosphere Analysis Unit Installer 1205
		18	01	2.A.44		Viewing Device Unstower 1215
		22	01	2.A.44		Viewing Device Translocator 1216
		27	01	2.A.44		Viewing Device Installer 1217
		18	01	2.A.17	-7	Camera Unstower 0292
		22	01	2.A.17	-7	Camera Translocator 1226
		27	01	2.A.17	-7	Camera Installer 0039
		18	01	2.A.04	-3	TV Camera Unstower 0054
		22	01	2.A.04	-3	TV Camera Translocator 0026
		27	01	2.A.04	-3	TV Camera Installer 0306
		18	01	2.B.06	-1	Computer Unstower 1054
		18	01	4.D.14		Heat Rejection System Unstower 1142
		18	01	2.A.43		Holographic Device Unstower 1240
		22	01	2.A.43		Holographic Device Translocator 1239
		27	01	2.A.43		Holographic Device Installer 1238
		18	01	2.D.56		Heating/Cooling Device Unstower 1253
		22	01	2.D.56		Heating/Cooling Device Translocator 1252

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-04-6	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	27	01	2.D.56		Heating/Cooling Device Installer	1251
		27	01	2.A.18		" " " "	1251
		18	01	2.D.51		Zone Refiner Unstower	1426
		22	01	2.D.51		Zone Refiner Translocator	1427
		27	01	2.D.51		Zone Refiner Installer	1428
		18	01	2.D.52		VHF Power Unit Unstower	1092
		22	01	2.D.52		VHF Power Unit Translocator	1093
		27	01	2.D.52		VHF Power Unit Installer	1091
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	e.I.05	-4	" " "	0847
		15	01	2.C.25		" " "	0847
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-04-7
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A
2.2 Crystal Growth; Single Crystal Growth from Melts		BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.C.25		Metal Sample Remover	1255
		27	01	2.C.25		Metal Sample Installer	1254
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.32		Heating/Positioning Coil Remover	1268
		27	01	2.D.32		Heating/Positioning Coil Installer	1269
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		26	01	2.D.20		Internal Attachments Remover	1154
		27	01	2.D.20		Internal Attachments Installer	1151
		26	01	2.D.34		Atmosphere Analysis Unit Remover	1206
		27	01	2.D.34		Atmosphere Analysis Unit Installer	1205

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-04-8
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts		MISSION MODE: A				
				BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		26	01	2.A.44	Viewing Device Remover	1218
		27	01	2.A.44	Viewing Device Installer	1217
		26	01	2.A.17 -7	Camera Remover	0314
		27	01	2.A.17 -7	Camera Installer	0039
		26	01	2.A.17 -7	Camera Module Remover	0158
		27	01	2.A.17 -7	Camera Module Installer	0160
		26	01	2.A.04 -3	TV Camera Remover	0661
		27	01	2.A.04 -3	TV Camera Installer	0306
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		26	01	2.D.56	Heating/Cooling Device Remover	1250
		27	01	2.D.56	Heating/Cooling Device Installer	1251
		26	01	2.D.56	Heating/Cooling Device Module Remover	1248
		27	01	2.D.56	Heating/Cooling Device Module Installer	1247
		26	01	2.D.52	VHF Power Unit Remover	1094
		27	01	2.D.52	VHF Power Unit Installer	1091
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		26	01	2.A.43	Holographic Device Remover	1237
		27	01	2.A.43	Holographic Device Installer	1238
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-04-9
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts		MISSION MODE: A				
		BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	4.D.14	Heat Rejection System Remover	1331
		27	01	4.D.14	Heat Rejection System Installer	1332
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		26	01	2.D.29	Zone Melter Remover	1409
		27	01	2.D.29	Zone Melter Installer	1408
		26	01	2.D.29	Zone Melter Module Remover	1410
		27	01	2.D.29	Zone Melter Module Installer	1411
		26	01	2.D.49	Crystal Puller Remover	1419
		27	01	2.D.49	Crystal Puller Installer	1418
		26	01	2.D.49	Crystal Puller Module Remover	1420
		27	01	2.D.49	Crystal Puller Module Installer	1421
		26	01	2.D.51	Zone Refiner Remover	1429
		27	01	2.D.51	Zone Refiner Installer	1428
		26	01	2.D.51	Zone Refiner Module Remover	1430
		27	01	2.D.51	Zone Refiner Module Installer	1431
35	Calibrate instruments	08	01	2.D.27	Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01	Materials Analysis Equipment Calibrator	1046
		08	01	2.D.52	VHF Power Unit Calibrator	1097
		08	01	4.C.01	" " " "	1097
		08	01	2.D.32	Heating/Positioning Coil Calibrator	1333

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-04-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts			MISSION MODE: A				
			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
35	(Continued)	08	01	4.C.01		Heating/Positioning Coil	1333
		08	01	2.A.43		Calibrator	1227
		08	01	4.C.01		Holographic Device Calibrator	1227
						" " "	
42	Install movie cameras	18	01	2.A.17	-7	Camera Unstower	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		27	01	2.A.17	-7	Camera Installer	0039
43	Install TV Cameras	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156
49	Install optical instrumentation and measuring devices	27	01	2.D.27		Materials Analysis Equipment Installer	1040
		27	01	2.A.17	-7	Camera Installer	0039
		27	01	2.A.04	-3	TV Camera Installer	0306
		27	01	2.A.43		Holographic Device Installer	1238
50	Checkout optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-04-11	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space			
EXPERIMENT:				MISSION MODE: A			
2.2 Crystal Growth; Single Crystal Growth from Melts				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
50	(Continued)	14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.17	-7	Camera Tester	1448
		14	01	2.B.06	-2	" "	1448
		01	01	2.B.06	-2	" "	1448
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	2.A.43		Holographic Device Tester	1449
		14	01	2.B.06	-2	" " "	1449
		01	01	2.B.06	-2	" " "	1449

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.29		Zone Melter Cleaner	1412
		19	01	4.D.06		" " "	1412
		19	01	2.D.49		Crystal Puller Cleaner	1422
		19	01	4.D.06		" " "	1422
		19	01	2.D.51		Zone Refiner Cleaner	1432
		19	01	4.D.06		" " "	1432
41	Communicate experiment results to earth	05	01	3.I.04	-8	Radio Communicator	0206
		05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
2.2 Crystal Growth; Single Crystal Growth from Melts			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Observe solid-liquid interface (crystal pulling)	02	01	2.C.25	-2	Crystal Growth Observer	1368
		02	01	2.D.49		" " "	1368
		02	01	2.D.56		" " "	1368
		02	01	2.A.18		" " "	1368
		02	01	3.I.05		" " "	1368
2	Determine characteristics of inter- face	04	01	3.I.05	-2	Crystal Growth Characteristics Determiner	1444
		04	01	2.C.25		Crystal Growth Characteristics Determiner	1444
		04	01	2.A.18		Crystal Growth Characteristics Determiner	1444
3	Adjust furnace temperature set point	15	01	2.B.06	-2	Materials Sciences C/D Equipment Control Actuator	1330
		15	01	2.D.32		Materials Sciences C/D Equipment Control Actuator	1330
		15	01	3.I.05	-2	Materials Sciences C/D Equipment Control Actuator	1330
		15	01	2.C.25		Materials Sciences C/D Equipment Control Actuator	1330
4	Interpret strip chart (temperature) records	12	01	2.B.06	-2	Crystal Growth Research Evaluator	1394
		12	01	2.D.32		" " " "	1394
		12	01	3.I.05	-2	" " " "	1394
		12	01	2.C.25		" " " "	1394

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-06-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Analyze crystal homogeneity with phase-contrast microscope	12	01	2.D.27	-8	Crystal Growth Structure Analyzer	1445
		12	01	2.C.25		" " " "	1445
		12	01	3.I.05		" " " "	1445
		12	01	2.A.18		" " " "	1445
8	Photograph solid-liquid interface with TV camera	15	01	2.A.04	-3	TV Camera Control Actuator	0899
		15	01	2.B.06	-2	" " " "	0899
		15	01	2.C.25		" " " "	0899
11	Observe crystal growth through microscope (floating zone)	02	01	2.C.25	-2	Crystal Growth Observer	1368
		02	01	2.D.29		" " "	1368
		02	01	2.D.56		" " "	1368
		02	01	2.A.18		" " "	1368
		02	01	3.I.05		" " "	1368
12	Take 16mm movies of crystal growth	15	01	2.A.17	-7	Camera Control Actuator	0245
		15	01	2.B.06	-2	" " "	0245
		15	01	2.C.25		" " "	0245
14	Activate zone heating	15	01	2.B.06	-2	Zone Melter Control Actuator	1405
		15	01	2.D.29		" " " "	1405
		15	01	3.I.05	-2	" " " "	1405
15	Move heating zone along crystal bar	15	01	2.B.06	-2	Zone Melter Control Actuator	1405

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
2.2 Crystal Growth; Single Crystal Growth from Melts					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	(Continued)	15	01	2.D.29		Zone Melter Control Actuator	1405
		15	01	3.I.05	-2	" " " "	1405
16	Observe temperature-monitoring devices	02	01	2.B.06	-2	Temperature Measurement Observer	0360
		02	01	2.D.29		" " "	0360
		02	01	3.I.05	-2	" " "	0360
36	Schedule experiment runs	13	01	2.B.06	-1	Crystal Growth Research Planner	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	3.I.05	-2	" " " "	1367
		13	01	2.C.25		" " " "	1367
37	Define apparatus configuration	13	01	2.D.13	-4	Crystal Growth Research Planner	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	2.D.29		" " " "	1367
		13	01	2.D.49		" " " "	1367
		13	01	2.D.56		" " " "	1367
		13	01	2.D.13	-1	" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.D.51		" " " "	1367
		13	01	2.C.25		" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	2.D.20		" " " "	1367

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-06-4
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space					
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	3.I.05	-2	Crystal Growth Research Planner	1367
		13	01	4.D.13		" " " "	1367
		13	01	4.D.14		" " " "	1367
		13	01	2.D.32		" " " "	1367
		13	01	2.D.34		" " " "	1367
		13	01	2.A.44		" " " "	1367
		13	01	2.A.17	-7	" " " "	1367
		13	01	2.A.43		" " " "	1367
		13	01	2.D.52		" " " "	1367
38	Define experiment conditions	13	01	2.C.25		Crystal Growth Research Planner	1367
		13	01	2.D.13	-1	" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.D.13	-4	" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	2.D.51		" " " "	1367
		13	01	2.D.34		" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	3.I.05	-2	" " " "	1367
		13	01	4.D.13		" " " "	1367
		13	01	2.D.20		" " " "	1367
		13	01	2.A.44		" " " "	1367
		13	01	2.A.17	-7	" " " "	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.A.43		" " " "	1367
		13	01	2.D.56		" " " "	1367

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-06-5	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space							
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	2.D.52		Crystal Growth Research Planner	1367
		13	01	4.D.14		" " " "	1367
39	Monitor experiment performance	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-06-6
DISCIPLINE:		Materials Science & Mfg.	FPE/SUBGROUP:		MS-1 - Materials Science & Manufacturing in Space		
EXPERIMENT:						MISSION MODE: A	
2.2 Crystal Growth; Single Crystal Growth from Melts					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Camera Operation Monitor	1344
		01	01	2.A.17	-7	" " "	1344
		01	01	2.B.06	-2	TV Camera Operation Monitor	1345
		01	01	2.A.04	-3	" " " "	1345
		01	01	2.B.06	-2	Holographic Device Operation Monitor	1228
		01	01	2.A.43		Holographic Device Operation Monitor	1228
		01	01	2.B.06	-2	Heating/Cooling Device Operation Monitor	1241
		01	01	2.D.56		Heating/Cooling Device Operation Monitor	1241
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " " "	1099
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Zone Melter Operation Monitor	1413
		01	01	2.D.29		" " " "	1413
		01	01	2.B.06	-2	Crystal Puller Operation Monitor	1423
		01	01	2.D.49		" " " "	1423
		01	01	2.B.06	-2	Zone Refiner Operator Monitor	1433
		01	01	2.D.51		" " " "	1433
40	Evaluate experiment results	11	01	3.I.05	-2	Crystal Growth Research Evaluator	1394

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-06-7	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space			
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
40	(Continued)	11	01	2.C.25	Crystal Growth Research Evaluator		1394
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.43	-3	Holographic Device Controller	1450
		10	01	2.A.04		TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02	Radio Communicator	0206	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-09-1
DISCIPLINE:		Materials Science & Mfg.		FPE/SUBGROUP:		MS-1 - Materials Science & Manufacturing in Space	
EXPERIMENT:						MISSION MODE: A	
2.2 Crystal Growth; Single Crystal Growth from Melts				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.29		Zone Melter Cleaner	1412
		19	01	4.D.06		" " "	1412
		19	01	2.D.49		Crystal Puller Cleaner	1422
		19	01	4.D.06		" " "	1422
		19	01	2.D.51		Zone Refiner Cleaner	1432
		19	01	4.D.06		" " "	1432
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-09-2	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-09-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 - Materials Science & Manufacturing in Space			
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts					MISSION MODE: A	
					BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.B.06 -1	Computer Disassembler	1056
		20	01	2.B.06 -1	Computer Assembler	1057
		26	01	2.B.06 -1	Computer Module Remover	0519
		27	01	2.B.06 -1	Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		21	01	2.D.27	Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27	Materials Analysis Equipment Assembler	1051
		26	01	2.D.27	Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer	1045
		21	01	2.D.24	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.24	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2,2-09-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts					MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225
		26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221
		21	01	2.A.17 -7	Camera Disassembler	0893
		20	01	2.A.17 -7	Camera Assembler	0894
		26	01	2.A.17 -7	Camera Module Remover	0158
		27	01	2.A.17 -7	Camera Module Installer	0160
		21	01	2.A.04 -3	TV Camera Disassembler	0900
		20	01	2.A.04 -3	TV Camera Assembler	0901
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		21	01	2.A.43	Holographic Device Disassembler	1231
		20	01	2.A.43	Holographic Device Assembler	1230
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234
		21	01	2.D.56	Heating/Cooling Device Disassembler	1244
		20	01	2.D.56	Heating/Cooling Device Assembler	1243
		26	01	2.D.56	Heating/Cooling Device Module Remover	1248
		27	01	2.D.56	Heating/Cooling Device Module Installer	1247
		21	01	2.D.13 -4	Environmental Chamber Disassembler	1063
		20	01	2.D.13 -4	Environmental Chamber Assembler	1064
		26	01	2.D.13 -4	Environmental Chamber Module Remover	1059

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-09-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts					MISSION MODE: A	
BASIC FUNCTION: 09 Scheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
34	(Continued)	27	01	2.D.13	-4	Environmental Chamber Module Installer 1060
		21	01	2.D.32		Heating/Positioning Coil Disassembler 1262
		20	01	2.D.32		Heating/Positioning Coil Assembler 1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover 1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer 1265
		21	01	2.D.29		Zone Melter Disassembler 1414
		20	01	2.D.29		Zone Melter Assembler 1438
		26	01	2.D.29		Zone Melter Module Remover 1410
		27	01	2.D.29		Zone Melter Module Installer 1411
		21	01	2.D.49		Crystal Puller Disassembler 1424
		20	01	2.D.49		Crystal Puller Assembler 1441
		26	01	2.D.49		Crystal Puller Module Remover 1420
		27	01	2.D.49		Crystal Puller Module Installer 1421
		21	01	2.D.51		Zone Refiner Disassembler 1434
		20	01	2.D.51		Zone Refiner Assembler 1435
		26	01	2.D.51		Zone Refiner Module Remover 1430
		27	01	2.D.51		Zone Refiner Module Installer 1431

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.2-10-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.2 Crystal Growth; Single Crystal Growth from Melts						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-2	" " "	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-2	" " "	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-10-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE:	A
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.2-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.D.27	Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer	1045
		21	01	2.D.24	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.24	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225
		26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221
		21	01	2.A.17 -7	Camera Disassembler	0893
		20	01	2.A.17 -7	Camera Assembler	0894
		26	01	2.A.17 -7	Camera Module Remover	0158
		27	01	2.A.17 -7	Camera Module Installer	0160
		21	01	2.A.04 -3	TV Camera Disassembler	0900
		20	01	2.A.04 -3	TV Camera Assembler	0901
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		21	01	2.A.43	Holographic Device Disassembler	1231
		20	01	2.A.43	Holographic Device Assembler	1230
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234
		21	01	2.D.56	Heating/Cooling Device Disassembler	1244

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	20	01	2.D.56		Heating/Cooling Device Assembler	1243
		26	01	2.D.56		Heating/Cooling Device Module Remover	1248
		27	01	2.D.56		Heating/Cooling Device Module Installer	1247
		21	01	2.D.13	-4	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-4	Environmental Chamber Assembler	1064
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.32		Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32		Heating/Positioning Coil Assembler	1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		21	01	2.D.29		Zone Melter Disassembler	1414
		20	01	2.D.29		Zone Melter Assembler	1438
		26	01	2.D.29		Zone Melter Module Remover	1410
		27	01	2.D.29		Zone Melter Module Installer	1411
		21	01	2.D.49		Crystal Puller Disassembler	1424
		20	01	2.D.49		Crystal Puller Assembler	1441
		26	01	2.D.49		Crystal Puller Module Remover	1420
		27	01	2.D.49		Crystal Puller Module Installer	1421
		21	01	2.D.51		Zone Refiner Disassembler	1434
		20	01	2.D.51		Zone Refiner Assembler	1435
		26	01	2.D.51		Zone Refiner Module Remover	1430

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.2-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Mfg. in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts			MISSION MODE: A				
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.51		Zone Refiner Module Installer	1431
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-2	" " "	1065
		28	01	2.D.13	-3	" " "	1065
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-10-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Mfg. in Space				
EXPERIMENT:						MISSION MODE: A	
2.2 Crystal Growth; Single Crystal Growth from Melts			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	28	01	4.D.13	Power Conditioning/Distribution System Repairer	1139	
		07	01	2.D.52	VHF Power Unit Fault Identifier	1103	
		07	01	4.C.02	" " " " "	1103	
		28	01	2.D.52	VHF Power Unit Repairer	1102	
		07	01	2.B.06	-1 Computer Fault Identifier	0523	
		07	01	4.C.02	" " "	0523	
		28	01	2.B.06	-1 Computer Repairer	0540	
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150	
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150	
		28	01	4.D.14	Heat Rejection System Repairer	1149	
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053	
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053	
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053	
		07	01	2.D.34	Atmosphere Analysis Unit Fault Identifier	1210	
		07	01	4.C.02	Atmosphere Analysis Unit Fault Identifier	1210	
		28	01	2.D.34	Atmosphere Analysis Unit Repairer	1211	
		07	01	2.A.44	Viewing Device Fault Identifier	1222	
		07	01	4.C.02	" " " "	1222	
		28	01	2.A.44	Viewing Device Repairer	1223	
		07	01	2.A.17	-7 Camera Fault Identifier	0886	
		07	01	4.C.02	" " "	0886	
		28	01	2.A.17	-7 Camera Repairer	1195	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-10-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.2 Crystal Growth; Single Crystal Growth from Melts						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	07	01	2.A.04	-3	TV Camera Fault Identifier	0689
		07	01	4.C.02		" " " "	0689
		28	01	2.A.04	-3	TV Camera Repairer	0690
		07	01	2.A.43		Holographic Device Fault Identifier	1233
		07	01	4.C.02		Holographic Device Fault Identifier	1233
		28	01	2.A.43		Holographic Device Repairer	1232
		07	01	2.D.56		Heating/Cooling Device Fault Identifier	1246
		07	01	4.C.02		Heating/Cooling Device Fault Identifier	1246
		28	01	2.D.56		Heating/Cooling Device Repairer	1245
		28	01	2.D.27		Materials Analysis Equipment Repairer	1052
		07	01	2.D.13	-4	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-4	Environmental Chamber Repairer	1065
		07	01	2.D.32		Heating/Positioning Coil Fault Identifier	1264
		07	01	4.C.02		Heating/Positioning Coil Fault Identifier	1264
		28	01	2.D.32		Heating/Positioning Coil Repairer	1263
		07	01	2.D.29		Zone Melter Fault Identifier	1439
		07	01	4.C.02		" " " "	1439
		28	01	2.D.29		Zone Melter Fault Repairer	1440
		07	01	2.D.49		Crystal Puller Fault Identifier	1442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.2-10-8	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.2 Crystal Growth; Single Crystal Growth from Melts						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	07	01	4.C.02	Crystal Puller Fault Identifier	1442	
		28	01	2.D.49	Crystal Puller Repairer	1443	
		07	01	2.D.51	Zone Refiner Fault Identifier	1436	
		07	01	4.C.02	" " " "	1436	
		28	01	2.D.51	Zone Refiner Repairer	1437	

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Crystal Growth

2.3 Crystal Growth from Vapor

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor							MISSION MODE: A
							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Program camera timer	15	01	4.D.04	-5	Camera Timer Control Actuator	1451
		15	01	4.D.04	-3	" " " "	1451
		15	01	2.B.06	-2	" " " "	1451
31	Set up experiment equipment	18	01	2.D.19		Materials Forming Equipment Unstower	1017
		22	01	2.D.19		Materials Forming Equipment Translocator	1018
		27	01	2.D.19		Materials Forming Equipment Installer	1016
		18	01	2.A.40	-1	Densitometer Unstower	1455
		22	01	2.A.40		Densitometer Translocator	1456
		27	01	2.A.40		Densitometer Installer	1457
		18	01	2.D.13	-2	Environmental Chamber Unstower	1058
		18	01	2.D.13	-3	" " " "	1058
		18	01	2.D.13	-4	" " " "	1058
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.24	-1	Furnace Unstower	0980
		18	01	2.D.24	-2	" "	0980
		18	01	2.A.17	-7	Camera Unstower	0292
		18	01	4.D.04	-3	" "	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		22	01	4.D.04	-3	" "	1226

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-04-2	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor		MISSION MODE: A					
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	27	01	2.A.17	-7	Camera Installer	0039
		27	01	4.D.04	-3	" "	0039
		18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
		18	01	2.D.20		Internal Attachments Unstower	1152
		22	01	2.D.20		Internal Attachments Translocator	1153
		27	01	2.D.20		Internal Attachments Installer	1151
		18	01	4.D.14		Heat Rejection System Unstower	1142
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.04	-8	" " "	0847
		15	01	2.C.23		" " "	0847
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.3-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor					MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
32	(Continued)	26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover 1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer 1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover 1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer 1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover 1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer 1135
		26	01	2.D.24	-1	Furnace Module Remover 0981
		26	01	2.D.24	-2	" " " 0981
		27	01	2.D.24	-1	Furnace Module Installer 0982
		27	01	2.D.24	-2	" " " 0982
		26	01	2.D.19		Materials Forming Equipment Remover 1019
		27	01	2.D.19		Materials Forming Equipment Installer 1016
		26	01	2.D.20		Internal Attachments Remover 1154
		27	01	2.D.20		Internal Attachments Installer 1151
		26	01	2.A.17	-7	Camera Remover 0314
		27	01	2.A.17	-7	Camera Installer 0039
		26	01	2.A.17	-7	Camera Module Remover 0158
		27	01	2.A.17	-7	Camera Module Installer 0160
		26	01	2.A.04	-3	TV Camera Remover 0661
		27	01	2.A.04	-3	TV Camera Installer 0306
		26	01	2.A.04	-3	TV Camera Module Remover 0111
		27	01	2.A.04	-3	TV Camera Module Installer 0112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-04-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.A.40	-1	Densitometer Remover	1458
		27	01	2.A.40	-1	Densitometer Installer	1457
		26	01	2.A.40	-1	Densitometer Module Remover	1459
		27	01	2.A.40	-1	Densitometer Module Installer	1460
		26	01	4.D.14		Heat Rejection System Remover	1331
		27	01	4.D.14		Heat Rejection System Installer	1332
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		26	01	4.D.04	-3	Camera Remover	0314
		27	01	4.D.04	-3	Camera Installer	0039
		26	01	4.D.04	-3	Camera Module Remover	0158
		27	01	4.D.04	-3	Camera Module Installer	0160
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
		08	01	2.A.40	-1	Densitometer Calibrator	1461
		08	01	4.C.01		" "	1461
42	Install movie cameras	18	01	2.A.17	-7	Camera Unstower	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		27	01	2.A.17	-7	Camera Installer	0039

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor			BASIC FUNCTION: 04 Experiment Setup				MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
43	Install TV Cameras	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156
49	Install optical instrumentation and recording devices	27	01	2.D.27		Materials Analysis Equipment Installer	1040
		27	01	2.A.17	-7	Camera Installer	0039
		27	01	2.A.04	-3	TV Camera Installer	0306
		27	01	4.D.04	-3	Camera Installer	0039
50	Checkout optical instrumentation	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.17	-7	Camera Tester	1448
		14	01	2.B.06	-2	" "	1448
		01	01	2.B.06	-2	" "	1448
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	4.D.04	-3	Camera Tester	1448

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-05-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment equipment	19	01	2.D.13	-2	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.19		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
41	Communicate experiment results to earth	05	01	3.I.04	-8	Radio Communicator	0206
		05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Observe crystal growth with metallographic microscope	02	01	2.C.25	-3	Crystal Growth Observer	1368
		02	01	3.I.05		" " "	1368
		02	01	2.D.27		" " "	1368
2	Determine macroscopic (crystal) faces growth rate	11	01	2.C.25	-3	Crystal Growth Structure Evaluator	1453
		11	01	3.I.05		Crystal Growth Structure Evaluator	1453
		11	01	2.D.27		Crystal Growth Structure Evaluator	1453
		13	01	2.C.25	-3	Crystal Growth Characteristics Determiner	1444
		13	01	3.I.05		Crystal Growth Characteristics Determiner	1444
3	Record macroscopic (crystal) faces growth velocities	06	01	3.I.05	-3	Crystal Growth Data Recorder	1454
		06	01	4.D.08		" " "	1454
		06	01	4.D.10		" " "	1454
4	Observe changes in preferential crystal growth directions	02	01	3.I.05	-3	Crystal Growth Observer	1368
		02	01	2.C.25		" " "	1368
		02	01	2.D.27		" " "	1368
5	Photograph crystal growth	15	01	2.C.25	-3	Camera Control Actuator	0245
		15	01	4.D.04		" " "	0245
		15	01	2.C.06		" " "	0245
		15	01	2.A.17		" " "	0245

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.3 Crystal Growth; Crystal Growth from Vapor						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	2.A.04	-3	TV Camera Control Actuator	0899
		15	01	2.C.25		" " " "	0899
		15	01	2.B.06	-2	" " " "	0899
7	Remove crystal growth tube from furnace	26	01	2.D.19	-4	Growth Tube Remover	1467
		26	01	2.C.25		" " "	1467
		26	01	2.D.24	-1	" " "	1467
		26	01	2.D.24	-2	" " "	1467
8	Rotate and translate growth tube in microscope field of view	10	01	2.D.27		Growth Tube Controller	1468
		10	01	2.D.19	-4	" " "	1468
		10	01	2.C.25		" " "	1468
		02	01	2.C.25		Crystal Growth Observer	1368
		02	01	2.D.27		" " "	1368
		02	01	2.D.19	-4	" " "	1368
		02	01	3.I.05	-3	" " "	1368
9	Observe crystal "whiskers" through microscope	02	01	2.D.27		Crystal Growth Observer	1368
		02	01	2.C.25		" " "	1368
		02	01	2.D.19	-4	" " "	1368
		02	01	3.I.05	-3	" " "	1368
10	Make photomicrogram of whiskers	15	01	2.C.25		Camera Control Actuator	0245
		15	01	2.D.19	-4	" " "	0245
		15	01	2.D.27		" " "	0245
		15	01	2.A.40	-1	" " "	0245
		15	01	4.D.04	-3	" " "	0245

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1			
							PAGE A-2.3-06-3			
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							
EXPERIMENT:							MISSION MODE: A			
2.3 Crystal Growth; Crystal Growth from Vapor			BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL				
NO.	DESCRIPTION					TITLE				NO.
36	Schedule experiment runs	13	01	2.B.06	-1	Crystal Growth Research Planner				1367
		13	01	2.B.06	-2	"	"	"	"	1367
		13	01	3.I.05	-3	"	"	"	"	1367
37	Define apparatus configurations	13	01	2.D.13	-2	Crystal Growth Research Planner				1367
		13	01	2.D.13	-3	"	"	"	"	1367
		13	01	2.D.13	-4	"	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	"	1367
		13	01	2.D.15		"	"	"	"	1367
		13	01	4.D.13		"	"	"	"	1367
		13	01	2.D.24	-1	"	"	"	"	1367
		13	01	2.D.24	-2	"	"	"	"	1367
		13	01	2.D.19	-4	"	"	"	"	1367
		13	01	2.D.20		"	"	"	"	1367
		13	01	2.A.17	-7	"	"	"	"	1367
		13	01	2.A.04	-3	"	"	"	"	1367
		13	01	2.A.40	-1	"	"	"	"	1367
		13	01	2.B.06	-1	"	"	"	"	1367
		13	01	4.D.14		"	"	"	"	1367
		13	01	2.D.27		"	"	"	"	1367
		13	01	2.C.25		"	"	"	"	1367
		13	01	3.I.05	-3	"	"	"	"	1367
		13	01	4.D.04	-3	"	"	"	"	1367
		13	01	4.D.04	-5	"	"	"	"	1367
38	Define experiment conditions	13	01	2.D.13	-2	Crystal Growth Research Planner				1367
		13	01	2.D.13	-3	"	"	"	"	1367
		13	01	2.D.13	-4	"	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	"	1367

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-06-4	
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	Define experiment conditions	13	01	2.D.13	-2	Crystal Growth Research Planner	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.D.13	-4	" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	4.D.13		" " " "	1367
		13	01	2.D.24	-1	" " " "	1367
		13	01	2.D.24	-2	" " " "	1367
		13	01	2.D.19	-4	" " " "	1367
		13	01	2.D.20		" " " "	1367
		13	01	2.A.17	-7	" " " "	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.A.40	-1	" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	4.D.14		" " " "	1367
		13	01	2.D.27		" " " "	1367
		13	01	2.C.25		" " " "	1367
		13	01	3.I.05	-3	" " " "	1367
		13	01	4.D.04	-3	" " " "	1367
		13	01	4.D.04	-5	" " " "	1367
39	Monitor experiment performance	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor	1141

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-06-5	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor		MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.D.24	-2	" " "	0985
		01	01	2.B.06	-2	Camera Operation Monitor	1344
		01	01	4.D.04	-3	" " "	1344
		01	01	2.A.17	-7	" " "	1344
		01	01	2.B.06	-2	TV Camera Operation Monitor	1345
		01	01	2.A.04	-3	" " "	1345
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Densitometer Operation Monitor	1462
		01	01	2.A.40	-1	" " "	1462
40	Evaluate experiment results	11	01	3.I.05	-3	Crystal Growth Research Evaluator	1394
		11	01	2.C.25		" " " "	1394

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-06-6	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor				MISSION MODE: A			
				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.3 Crystal Growth; Crystal Growth from Vapor						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	Refurbish experiment equipment	19	01	2.D.13	-2	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.19		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Module Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-09-2
DISCIPLINE: Materials Science & Mfg.			EPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.A.40	-1	Densitometer Disassembler	1463
		20	01	2.A.40	-1	Densitometer Assembler	1464
		26	01	2.A.40	-1	Densitometer Module Remover	1459
		27	01	2.A.40	-1	Densitometer Module Installer	1460
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24		Furnace Disassembler	0986
		20	01	2.D.24		Furnace Assembler	0987
		26	01	2.D.24		Furnace Module Remover	0981
		27	01	2.D.24		Furnace Module Installer	0982
		21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.3-09-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.3 Crystal Growth; Crystal Growth from Vapor					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.D.13	-4	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-4	Environmental Chamber Assembler	1064
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.24	-2	Furnace Disassembler	0986
		20	01	2.D.24	-2	Furnace Assembler	0987
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-2	Furnace Module Installer	0982
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

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DISCIPLINE: Materials Science & Mfg.

FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT:

2.3 Crystal Growth; Crystal Growth from Vapor

MISSION MODE: A

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	4.D.04	-3	Camera Disassembler	0893
		20	01	4.D.04	-3	Camera Assembler	0894
		26	01	4.D.04	-3	Camera Module Remover	0158
		27	01	4.D.04	-3	Camera Module Installer	0160
		21	01	4.D.04	-5	Camera Timer Disassembler	1452
		20	01	4.D.04	-5	Camera Timer Assembler	1469
		26	01	4.D.04	-5	Camera Timer Module Remover	1470
		27	01	4.D.04	-5	Camera Timer Module Installer	1471

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.3-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Module Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.A.40	-1	Densitometer Disassembler	1463
		20	01	2.A.40	-1	Densitometer Assembler	1464
		26	01	2.A.40	-1	Densitometer Module Remover	1459
		27	01	2.A.40	-1	Densitometer Module Installer	1460
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.3-10-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor					MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	Furnace Disassembler	0986
		20	01	2.D.24	Furnace Assembler	0987
		26	01	2.D.24	Furnace Module Remover	0981
		27	01	2.D.24	Furnace Module Installer	0982
		21	01	4.D.04	-3 Camera Disassembler	0893
		20	01	4.D.04	-3 Camera Assembler	0894
		26	01	4.D.04	-3 Camera Module Remover	0158
		27	01	4.D.04	-3 Camera Module Installer	0160
		21	01	4.D.04	-5 Camera Timer Disassembler	1452
		20	01	4.D.04	-5 Camera Timer Assembler	1469
		26	01	4.D.04	-5 Camera Timer Module Remover	1470
		27	01	4.D.04	-5 Camera Timer Module Installer	1471
		21	01	2.A.17	-7 Camera Disassembler	0893
		20	01	2.A.17	-7 Camera Assembler	0894
		26	01	2.A.17	-7 Camera Module Remover	0158
		27	01	2.A.17	-7 Camera Module Installer	0160
		21	01	2.A.04	-3 TV Camera Disassembler	0900
		20	01	2.A.04	-3 TV Camera Assembler	0901
		26	01	2.A.04	-3 TV Camera Module Remover	0111
		27	01	2.A.04	-3 TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.3-10-3		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor								MISSION MODE: A	
							BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
34	(Continued)	21	01	2.D.13	-4	Environmental Chamber Disassembler	1063		
		20	01	2.D.13	-4	Environmental Chamber Assembler	1064		
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059		
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060		
		21	01	2.D.24	-2	Furnace Disassembler	0986		
		20	01	2.D.24	-2	Furnace Assembler	0987		
		26	01	2.D.24	-2	Furnace Module Remover	0981		
		27	01	2.D.24	-2	Furnace Module Installer	0982		
		21	01	2.B.06	-1	Computer Disassembler	1056		
		20	01	2.B.06	-1	Computer Assembler	1057		
		26	01	2.B.06	-1	Computer Module Remover	0519		
		27	01	2.B.06	-1	Computer Module Installer	0520		
		21	01	4.D.14		Heat Rejection System Disassembler	1147		
		20	01	4.D.14		Heat Rejection System Assembler	1148		
		26	01	4.D.14		Heat Rejection System Module Remover	1143		
		27	01	4.D.14		Heat Rejection System Module Installer	1144		
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050		
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051		
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044		
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.3-10-4		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
2.3 Crystal Growth; Crystal Growth from Vapor			BASIC FUNCTION: 10 Unscheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
48	Repair experiment equipment	07	01	2.D.13	-4	Environmental Chamber Fault Identifier		1066	
		07	01	2.D.13	-2	Environmental Chamber Fault Identifier		1066	
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier		1066	
		07	01	4.C.02		Environmental Chamber Fault Identifier		1066	
		28	01	2.D.13	-4	Environmental Chamber Repairer		1065	
		28	01	2.D.13	-2	" " "		1065	
		28	01	2.D.13	-3	" " "		1065	
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier		1039	
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier		1039	
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer		1038	
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier		1133	
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier		1133	
		28	01	2.D.15		Atmosphere Supply/Control System Repairer		1132	
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier		1140	
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier		1140	
		28	01	4.D.13		Power Conditioning/Distribution System Repairer		1139	
		07	01	2.D.24	-1	Furnace Fault Identifier		0989	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.3-10-5
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor		MISSION MODE: A				
BASIC FUNCTION: 10 Unscheduled Maintenance						
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	4.C.02	Furnace Fault Identifier	0989
		28	01	2.D.24 -1	Furnace Repairer	0988
		07	01	2.D.24 -2	Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24 -2	Furnace Repairer	0988
		07	01	2.A.40 -1	Densitometer Fault Identifier	1465
		07	01	4.C.02	" " "	1465
		07	01	4.C.07	" " "	1465
		28	01	2.A.40 -1	Densitometer Repairer	1466
		07	01	2.B.06 -1	Computer Fault Identifier	0523
		07	01	4.C.02	" " "	0523
		28	01	2.B.06 -1	Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150
		28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		07	01	2.A.17 -7	Camera Fault Identifier	0886
		07	01	4.C.02	" " "	0886
		28	01	2.A.17 -7	Camera Repairer	1195
		07	01	2.A.04 -3	TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
DISCIPLINE: Materials Science & Mfg.						PAGE A-2.3-10-6	
FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A	
EXPERIMENT: 2.3 Crystal Growth; Crystal Growth from Vapor						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	28	01	2.A.04	-3	TV Camera Repairer	0690
		07	01	4.D.04	-3	Camera Fault Identifier	0886
		07	01	4.C.02		" " "	0886
		28	01	4.D.04	-3	Camera Repairer	1195
		07	01	4.D.04	-5	Camera Timer Fault Identifier	1472
		07	01	4.C.02		" " " "	1472
		28	01	4.D.04	-5	Camera Timer Repairer	1473

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Crystal Growth

2.4 Supercooling and Homogeneous
Nucleation

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.4-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Determine appropriate equipment configuration	13	01	3.I.05	-4	Crystal Growth Research Planner	1367
		13	01	2.C.25		" " " "	1367
		13	01	2.D.13	-4	" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.D.48		" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	4.D.13		" " " "	1367
		13	01	2.D.32		" " " "	1367
		13	01	2.D.29		" " " "	1367
		13	01	2.D.46		" " " "	1367
		13	01	2.D.20		" " " "	1367
		13	01	2.D.34		" " " "	1367
		13	01	2.A.44		" " " "	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.A.43		" " " "	1367
		13	01	2.D.52		" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	4.D.14		" " " "	1367
		13	01	2.D.27		" " " "	1367
2	Set up apparatus in appropriate configuration	18	01	2.D.13	-4	Environmental Chamber Unstower	1058
		18	01	2.D.13	-2	" " " "	1058
		18	01	2.D.13	-3	" " " "	1058
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-04-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
2	(Continued)	18	01	4.D.13	Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.32	Heating/Positioning Coil Unstower	1271
		22	01	2.D.32	Heating/Positioning Coil Translocator	1270
		27	01	2.D.32	Heating/Positioning Coil Installer	1269
		18	01	2.D.29	Zone Melter Unstower	1406
		22	01	2.D.29	Zone Melter Translocator	1407
		27	01	2.D.29	Zone Melter Installer	1408
		18	01	2.D.20	Internal Attachments Unstower	1152
		22	01	2.D.20	Internal Attachments Translocator	1153
		27	01	2.D.20	Internal Attachments Installer	1151
		18	01	2.D.34	Atmosphere Analysis Unit Unstower	1203
		22	01	2.D.34	Atmosphere Analysis Unit Translocator	1204
		27	01	2.D.34	Atmosphere Analysis Unit Installer	1205
		18	01	2.A.44	Viewing Device Unstower	1215
		22	01	2.A.44	Viewing Device Translocator	1216
		27	01	2.A.44	Viewing Device Installer	1217
		18	01	2.A.04 -3	TV Camera Unstower	0054
		22	01	2.A.04 -3	TV Camera Translocator	0026
		27	01	2.A.04 -3	TV Camera Installer	0306
		18	01	2.B.06 -1	Computer Unstower	1054
		18	01	4.D.14	Heat Rejection System Unstower	1142
		18	01	2.A.43	Holographic Device Unstower	1240
		22	01	2.A.43	Holographic Device Translocator	1239
		27	01	2.A.43	Holographic Device Installer	1238
		18	01	2.D.52	VHF Power Unit Unstower	1092
		22	01	2.D.52	VHF Power Unit Translocator	1093
		27	01	2.D.52	VHF Power Unit Installer	1091

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	(Continued)	18	01	2.D.46		Calorimeter Unstower	1482
		22	01	2.D.46		Calorimeter Translocator	1481
		27	01	2.D.46		Calorimeter Installer	1480
		18	01	2.D.48		Friction Measuring Device Unstower	1494
		22	01	2.D.48		Friction Measuring Device	1493
						Translocator	
		27	01	2.D.48		Friction Measuring Device	1492
						Installer	
3	Check equipment functioning	15	01	2.B.06	-2	Materials Sciences C/D Equipment	1172
						Control Actuator	
		01	01	2.B.06	-2	Materials Sciences C/D Equipment	1501
						Operation Monitor	
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " "	0847
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		15	01	2.B.06	-2	Environmental Chamber Control	1173
						Actuator	
		15	01	2.D.13	-2	Environmental Chamber Control	1173
						Actuator	
		15	01	2.D.13	-3	Environmental Chamber Control	1173
						Actuator	
		15	01	2.D.13	-4	Environmental Chamber Control	1173
						Actuator	
		01	01	2.B.06	-2	Environmental Chamber Operation	1141
						Monitor	
		01	01	2.D.13	-2	Environmental Chamber Operation	1141
						Monitor	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-04-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
3	(Continued)	01	01	2.D.13	-3	Environmental Chamber Operation Monitor 1141
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor 1141
		15	01	2.D.46		Calorimeter Control Actuator 0392
		15	01	2.B.06	-2	" " " " 0392
		01	01	2.B.06	-2	Calorimeter Operation Monitor 0391
		01	01	2.D.46		" " " " 0391
		15	01	2.B.06	-2	VHF Power Unit Control Actuator 1183
		15	01	2.D.52		" " " " " " 1183
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor 1099
		01	01	2.D.52		" " " " " " 1099
		15	01	2.B.06	-2	Friction Measuring Device Control Actuator 1496
		15	01	2.D.48		Friction Measuring Device Control Actuator 1496
		01	01	2.B.06	-2	Friction Measuring Device Operation Monitor 1487
		01	01	2.D.48		Friction Measuring Device Operation Monitor 1487
		15	01	2.B.06	-2	Zone Melter Control Actuator 1405
		15	01	2.D.29		" " " " " " 1405
		01	01	2.B.06	-2	Zone Melter Operation Monitor 1413
		01	01	2.D.29		" " " " " " 1413
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator 1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator 1179
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor 1136

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGEA-2.4-04-5	
DISCIPLINE Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	(Continued)	01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1214
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1214
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		01	01	2.B.06	-2	Holographic Device Operation Monitor	1228
		01	01	2.A.43		Holographic Device Operation Monitor	1228
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-04-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	(Continued)	01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		15	01	2.B.06	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
		01	01	2.B.06	-2	TV Camera Operation Monitor	1345
		01	01	2.A.04	-3	" " " "	1345
4	Introduce bar of sample material	27	01	2.C.25		Materials Sample Installer	1356
		27	01	2.D.29		" " "	1356
5	Program controls for prescribed conditions	15	01	2.B.06	-2	Calorimeter Control Actuator	0392
		15	01	2.D.46		" " "	0392
		15	01	3.I.05	-4	" " "	0392
		15	01	2.B.06		Friction Measuring Device Control Actuator	1496
		15	01	2.D.48		Friction Measuring Device Control Actuator	1496
		15	01	3.I.05	-4	Friction Measuring Device Control Actuator	1496

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-04-7	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
5	(Continued)	15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-4	Environmental Chamber Control Actuator	1173
		15	01	3.I.05	-4	Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		15	01	3.I.05	-4	Materials Science C/D Equipment Control Actuator	1172
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	3.I.05	-4	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	3.I.05	-4	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
15	01	3.I.05	-4	Heating/Positioning Coil Control Actuator	1260		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-04-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	2.B.06	-2	Zone Melter Control Actuator	1405
		15	01	2.D.29		" " " "	1405
		15	01	3.I.05	-4	" " " "	1405
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1214
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1214
		15	01	3.I.05	-4	Atmosphere Analysis Unit Control Actuator	1214
		15	01	2.B.06	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
		15	01	3.I.05	-4	" " " "	0899
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	3.I.05	-4	Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183
		15	01	2.D.52		" " " " "	1183
		15	01	3.I.05	-4	" " " " "	1183
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " " "	0847
		15	01	3.I.05	-4	" " " "	0847
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.4-04-9
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	15	01	3.I.05	-4	Heat Rejection System Control Actuator	1184
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	3.I.05	-4	" " "	0847
		15	01	2.C.25		" " "	0847
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		26	01	2.C.25		Metal Sample Remover	1255
		27	01	2.C.25		Metal Sample Installer	1254
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-04-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128	
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134	
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135	
		26	01	2.D.32	Heating/Positioning Coil Remover	1268	
		27	01	2.D.32	Heating/Positioning Coil Installer	1269	
		26	01	2.D.32	Heating/Positioning Coil Module Remover	1266	
		27	01	2.D.32	Heating/Positioning Coil Module Installer	1265	
		26	01	2.D.20	Internal Attachments Remover	1154	
		27	01	2.D.20	Internal Attachments Installer	1151	
		26	01	2.D.34	Atmosphere Analysis Unit Remover	1206	
		27	01	2.D.34	Atmosphere Analysis Unit Installer	1205	
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208	
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209	
		26	01	2.A.44	Viewing Device Remover	1218	
		27	01	2.A.44	Viewing Device Installer	1217	
		26	01	2.A.04	-3 TV Camera Remover	0661	
		27	01	2.A.04	-3 TV Camera Installer	0306	
		26	01	2.A.04	-3 TV Camera Module Remover	0111	
		27	01	2.A.04	-3 TV Camera Module Installer	0112	
		26	01	2.D.48	Friction Measuring Device Remover	1491	
		27	01	2.D.48	Friction Measuring Device Installer	1492	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-04-11
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	2.D.48	Friction Measuring Device Module Remover	1490
		27	01	2.D.48	Friction Measuring Device Module Installer	1489
		26	01	2.D.52	VHF Power Unit Remover	1094
		27	01	2.D.52	VHF Power Unit Installer	1091
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		26	01	2.A.43	Holographic Device Remover	1237
		27	01	2.A.43	Holographic Device Installer	1238
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234
		26	01	4.D.14	Heat Rejection System Remover	1331
		27	01	4.D.14	Heat Rejection System Installer	1332
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		26	01	2.D.29	Zone Melter Remover	1409
		27	01	2.D.29	Zone Melter Installer	1408
		26	01	2.D.29	Zone Melter Module Remover	1410
		27	01	2.D.29	Zone Melter Module Installer	1411
		26	01	2.D.46	Calorimeter Remover	1479
		27	01	2.D.46	Calorimeter Installer	1480
		26	01	2.D.46	Calorimeter Module Remover	1478
		27	01	2.D.46	Calorimeter Module Installer	1477
35	Calibrate instruments	08	01	2.D.27	Materials Analysis Equipment Calibrator	1046

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-04-12
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
35	(Continued)	08	01	4.C.01	Materials Analysis Equipment Calibrator	1046
		08	01	2.D.52	VHF Power Unit Calibrator	1097
		08	01	4.C.01	" " " "	1097
		08	01	2.D.32	Heating/Positioning Coil Calibrator	1333
		08	01	4.C.01	Heating/Positioning Coil Calibrator	1333
		08	01	2.A.43	Holographic Device Calibrator	1227
		08	01	4.C.01	" " "	1227
		08	01	2.D.46	Calorimeter Calibrator	0380
		08	01	4.C.01	" "	0380
		08	01	2.D.48	Friction Measuring Device Calibrator	1488
		08	01	4.C.01	Friction Measuring Device Calibrator	1488
43	Install TV Cameras	18	01	2.A.04	-3 TV Camera Unstower	0054
		22	01	2.A.04	-3 TV Camera Translocator	0026
		27	01	2.A.04	-3 TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10	Data Recorder Installer	1156
47	Install optical instrumentation and measuring devices	27	01	2.D.27	Materials Analysis Equipment Installer	1040
		27	01	2.A.04	-3 TV Camera Installer	0306
		27	01	2.A.43	Holographic Device Installer	1238

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-04-13	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
50	Checkout optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	2.A.43		Holographic Device Tester	1449
		14	01	2.B.06	-2	" " "	1449
		01	01	2.B.06	-2	" " "	1449

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
12	Secure samples in containers	26	01	2.C.25		Materials Sample Remover	1357
		26	01	2.D.29		" " "	1357
		22	01	2.C.25		Materials Sample Translocator	1355
		17	01	2.C.25		Materials Sample Stower	1371
		17	01	2.D.25		" " "	1371
		17	01	3.I.05	-4	" " "	1371
13	Clean experiment apparatus	19	01	2.D.46		Calorimeter Cleaner	1500
		19	01	4.D.06		" " "	1500
		19	01	2.D.48		Friction Measuring Device Cleaner	1498
		19	01	4.D.06		" " " "	1498
		19	01	2.D.29		Zone Melter Cleaner	1412
		19	01	4.D.06		" " "	1412
		19	01	2.D.13	-4	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-2	" " "	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
14	Dismantle experiment setup	16	01	2.B.06	-2	Calorimeter Control Deactuator	0393
		16	01	2.D.46		" " "	0393
		26	01	2.D.46		Calorimeter Remover	1479
		16	01	2.B.06	-2	Friction Measuring Device Control Deactuator	1495

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.4-05-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	(Continued)	16	01	2.D.48		Friction Measuring Device Control Deactuator	1495
		26	01	2.D.48		Friction Measuring Device Remover	1491
		16	01	2.B.06	-2	Environmental Chamber Control Deactuator	1503
		16	01	2.D.13	-2	Environmental Chamber Control Deactuator	1503
		16	01	2.D.13	-3	Environmental Chamber Control Deactuator	1503
		16	01	2.D.13	-4	Environmental Chamber Control Deactuator	1503
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330
		16	01	2.B.06	-2	Atmosphere Supply/Control System Control Deactuator	1502
		16	01	2.D.15		Atmosphere Supply/Control System Control Deactuator	1502
		16	01	2.B.06	-2	Power Conditioning/Distribution System Control Deactuator	1504
		16	01	4.D.13		Power Conditioning/Distribution System Control Deactuator	1504
		16	01	2.B.06	-2	Heating/Positioning Coil Control Deactuator	1505
		16	01	2.D.32		Heating/Positioning Coil Control Deactuator	1505
		26	01	2.D.32		Heating/Positioning Coil Remover	1268
		16	01	2.B.06	-2	Zone Melter Control Deactuator	1506
		16	01	2.D.29		" " " "	1506
		26	01	2.D.29		Zone Melter Remover	1409
		16	01	2.B.06	-2	Atmosphere Analysis Unit Control Deactuator	1507

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-05-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation				BASIC FUNCTION: 05 Experiment Shutdown			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
14	(Continued)	16	01	2.D.34		Atmosphere Analysis Unit Control Deactuator	1507
		26	01	2.D.34		Atmosphere Analysis Unit Remover	1206
		16	01	2.B.06	-2	TV Camera Control Deactuator	0672
		16	01	2.A.04	-3	" " " "	0672
		26	01	2.A.04	-3	TV Camera Remover	0661
		16	01	2.B.06	-2	Holographic Device Control Deactuator	1508
		16	01	2.A.43		Holographic Device Control Deactuator	1508
		26	01	2.A.43		Holographic Device Remover	1237
		16	01	2.B.06	-2	VHF Power Unit Control Deactuator	1509
		16	01	2.D.52		" " " " "	1509
		26	01	2.D.52		VHF Power Unit Remover	1094
		16	01	2.B.06	-2	Computer Control Deactuator	0319
		16	01	2.B.06	-1	" " "	0319
		16	01	2.B.06	-2	Heat Rejection System Control Deactuator	1510
		16	01	4.D.14		Heat Rejection System Control Deactuator	1510
15	Secure apparatus	17	01	2.D.13	-2	Environmental Chamber Stower	1061
		17	01	2.D.13	-3	" " "	1061
		17	01	2.D.13	-4	" " "	1061
		17	01	2.B.06	-2	Materials Science C/D Equipment Stower	1168
		17	01	2.D.15		Atmosphere Supply/Control System Stower	1169
		17	01	4.D.13		Power Conditioning/Distribution System Stower	1170

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.4-05-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	(Continued)	22	01	2.D.32		Heating/Positioning Coil Translocator	1270
		17	01	2.D.32		Heating/Positioning Coil Stower	1267
		22	01	2.D.29		Zone Melter Translocator	1407
		17	01	2.D.29		Zone Melter Stower	1511
		22	01	2.D.46		Calorimeter Translocator	1481
		17	01	2.D.46		Calorimeter Stower	1499
		22	01	2.D.48		Friction Measuring Device Translocator	1493
		17	01	2.D.48		Friction Measuring Device Stower	1497
		22	01	2.D.20		Internal Attachments Translocator	1153
		17	01	2.D.20		Internal Attachments Stower	1155
		22	01	2.D.34		Atmosphere Analysis Unit Translocator	1204
		17	01	2.D.34		Atmosphere Analysis Unit Stower	1207
		22	01	2.A.44		Viewing Device Translocator	1216
		17	01	2.A.44		Viewing Device Stower	1219
		22	01	2.A.04	-3	TV Camera Translocator	0026
		17	01	2.A.04	-3	TV Camera Stower	0064
		22	01	2.A.43		Holographic Device Translocator	1239
		17	01	2.A.43		Holographic Device Stower	1236
		22	01	2.D.52		VHF Power Unit Translocator	1093
		17	01	2.D.52		VHF Power Unit Stower	1098
		17	01	2.B.06	-1	Computer Stower	1160
		17	01	4.D.14		Heat Rejection System Stower	1145
		22	01	2.D.27		Materials Analysis Equipment Translocator	1042
		17	01	2.D.27		Materials Analysis Equipment Stower	1047

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-05-5	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
41	Communicate experiment results to earth	05 05	01 01	3.I.05 4.A.02	-4	Radio Communicator " "	0206 0206
44	Develop film; make prints	06 06 06 06	01 01 01 01	2.A.27 4.B.08 2.A.27 4.B.08		Film Developer " " Photograph Printer Controller " " "	0328 0328 1159 1159

FLIGHT EXPERIMENT TASK-SKILLS										SERIES MS-1	
										PAGE A-2.4-06-1	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							
EXPERIMENT:				MISSION MODE: A							
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL					
NO.	DESCRIPTION					TITLE				NO.	
6	Periodically monitor zone melting process		01	01	2.B.06	-2	Crystal Growth Process Monitor				1512
			01	01	2.C.25		"	"	"	"	1512
			01	01	2.D.29		"	"	"	"	1512
			01	01	3.I.05	-4	"	"	"	"	1512
			01	01	2.A.04	-3	"	"	"	"	1512
7	Continuously monitor ingot separation process		01	01	2.B.06	-2	Crystal Growth Process Monitor				1512
			01	01	2.A.04	-3	"	"	"	"	1512
			01	01	2.C.25		"	"	"	"	1512
			01	01	3.I.05	-4	"	"	"	"	1512
			01	01	2.D.29		"	"	"	"	1512
		01	01	2.D.32		"	"	"	"	1512	
8	Check operation of automatic equipment		01	01	2.B.06	-2	Calorimeter Operation Monitor				0391
			01	01	2.D.46		"	"	"	"	0391
			01	01	2.B.06	-2	Friction Measuring Device Operation Monitor				1487
			01	01	2.D.48		Friction Measuring Device Operation Monitor				1487
9	Determine second cooling cycle requirements		13	01	3.I.05	-4	Crystal Growth Research Planner				1367
			13	01	2.C.25		"	"	"	"	1367
			13	01	2.D.13	-2	"	"	"	"	1367
			13	01	2.D.13	-3	"	"	"	"	1367
			13	01	2.D.13	-4	"	"	"	"	1367
			13	01	2.B.06	-2	"	"	"	"	1367
			13	01	2.A.04	-3	"	"	"	"	1367

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-06-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Conduct voice conferences with ground personnel	05	01	3.I.05	-4	Radio Communicator	0206
		05	01	4.A.02		" "	0206
11	Program equipment for second cooling cycle	15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		15	01	3.I.05	-4	Materials Science C/D Equipment Control Actuator	1172
		15	01	2.C.25		Materials Science C/D Equipment Control Actuator	1172
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " "	0847
		15	01	3.I.05	-4	" " "	0847
		15	01	2.C.25		" " "	0847
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-4	Environmental Chamber Control Actuator	1173
		15	01	3.I.05	-4	Environmental Chamber Control Actuator	1173
		15	01	2.C.25		Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-2.4-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	(Continued)	15	01	4.D.14		Heat Rejection System Control Actuator	1184
		15	01	3.I.05	-4	Heat Rejection System Control Actuator	1184
		15	01	2.C.25		Heat Rejection System Control Actuator	1184
16	Measure sample weights and dimensions	15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.C.25		Holographic Device Control Actuator	1229
		15	01	3.I.05	-4	Holographic Device Control Actuator	1229
17	Prepare sections of samples	10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	2.C.25		Materials Analysis Equipment Controller	1049
		10	01	3.I.05	-4	Materials Analysis Equipment Controller	1049
18	Perform metallographic examination of grain structure	12	01	2.C.25		Crystal Growth Structure Analyzer	1445
		12	01	3.I.05	-4	" " " "	1445
		12	01	2.D.27		" " " "	1445

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.4-06-4		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
19	Dictate notes on voice recorder	05 05	01 01	3.I.05 4.D.05	-4	Crystal Growth Data Recorder " " " "	1454 1454		
20	Prepare photographs of metallographic sections	15 15 15 06 06 06 06	01 01 01 01 01 01 01	2.C.25 3.I.05 4.D.04 2.A.27 4.B.08 2.A.27 4.B.08	-4 -3	Camera Control Actuator " " " " " " Film Developer " " Photograph Printer Controller " " "	0245 0245 0245 0328 0328 1159 1159		
21	Analyze metallographic section photographs	12 12 12 12	01 01 01 01	2.C.25 3.I.05 2.D.27 4.D.04	-4 -6	Crystal Growth Structure Analyzer " " " " " " " " " " " "	1445 1445 1445 1445		
22	Prepare photograph enlargements	06 06	01 01	2.A.27 4.B.08		Photograph Enlarger Controller " " "	1158 1158		
23	Transmit photographs to ground by TV	10 10 10 10	01 01 01 01	2.B.06 4.A.01 4.D.04 2.A.04	-2 -6 -3	Telemetry Equipment Controller " " " " " " " " "	1104 1104 1104 1104		
24	Initiate experiment sequence	15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-06-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	(Continued)	15	01	3.I.05	-4	Materials Science C/D Equipment Control Actuator	1172
36	Schedule experiment runs	13	01	2.B.06	-1	Crystal Growth Research Planner	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	3.I.05	-4	" " " "	1367
		13	01	2.C.25		" " " "	1367
37	Define apparatus configuration	13	01	2.D.13	-4	Crystal Growth Research Planner	1367
		13	01	2.A.04	-3	" " " "	1367
		13	01	2.B.06	-2	" " " "	1367
		13	01	2.B.06	-1	" " " "	1367
		13	01	2.D.29		" " " "	1367
		13	01	2.D.46		" " " "	1367
		13	01	2.D.13	-2	" " " "	1367
		13	01	2.D.13	-3	" " " "	1367
		13	01	2.C.25		" " " "	1367
		13	01	2.D.48		" " " "	1367
		13	01	2.D.15		" " " "	1367
		13	01	2.D.20		" " " "	1367
		13	01	3.I.05	-4	" " " "	1367
		13	01	4.D.13		" " " "	1367
		13	01	4.D.14		" " " "	1367
		13	01	2.D.32		" " " "	1367
		13	01	2.D.34		" " " "	1367
		13	01	2.A.44		" " " "	1367
		13	01	2.A.43		" " " "	1367
		13	01	2.D.52		" " " "	1367

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1			
							PAGE A-2.4-06-6			
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							
EXPERIMENT:								MISSION MODE: A		
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation			BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL				
NO.	DESCRIPTION					TITLE			NO.	
38	Define experiment conditions	13	01	2.C.25		Crystal Growth Research Planner			1367	
		13	01	2.D.46		"	"	"	"	1367
		13	01	2.D.13	-2	"	"	"	"	1367
		13	01	2.D.13	-3	"	"	"	"	1367
		13	01	2.D.13	-4	"	"	"	"	1367
		13	01	2.D.29		"	"	"	"	1367
		13	01	2.D.32		"	"	"	"	1367
		13	01	2.D.15		"	"	"	"	1367
		13	01	2.D.48		"	"	"	"	1367
		13	01	2.D.34		"	"	"	"	1367
		13	01	2.B.06	-1	"	"	"	"	1367
		13	01	2.B.06	-2	"	"	"	"	1367
		13	01	3.I.05	-4	"	"	"	"	1367
		13	01	4.D.13		"	"	"	"	1367
		13	01	2.D.20		"	"	"	"	1367
		13	01	2.A.44		"	"	"	"	1367
		13	01	2.A.04	-3	"	"	"	"	1367
		13	01	2.A.43		"	"	"	"	1367
		13	01	2.D.52		"	"	"	"	1367
		13	01	4.D.14		"	"	"	"	1367
39	Monitor experiment performance	01	01	2.B.06	-2	Environmental Chamber Operation Monitor			1141	
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor			1141	
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor			1141	
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor			1141	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-2.4-06-7
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE:	A
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.B.06	-2	TV Camera Operation Monitor	1345
		01	01	2.A.04	-3	" " " "	1345
		01	01	2.B.06	-2	Holographic Device Operation Monitor	1228
		01	01	2.A.43		Holographic Device Operation Monitor	1228
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " "	1099
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Zone Melter Operation Monitor	1413

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-2.4-06-8		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation							MISSION MODE: A		
							BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
39	(Continued)	01	01	2.D.29	-2	Zone Melter Operation Monitor		1413	
		01	01	2.D.46		Calorimeter Operation Monitor		0391	
		01	01	2.B.06		" " "		0391	
		01	01	2.D.48		Friction Measuring Device Operation Monitor		1487	
		01	01	2.B.06	-2	Friction Measuring Device Operation Monitor		1487	
40	Evaluate experiment results	11	01	3.I.05	-4	Crystal Growth Research Evaluator		1394	
		11	01	2.C.25		Crystal Growth Research Evaluator		1394	
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.43	-3	Holographic Device Controller		1450	
		10	01	2.A.04		TV Camera Controller		0334	
		10	01	4.A.01		Telemetry Equipment Controller		1104	
		10	01	4.D.10		Data Recorder Controller		1157	
		10	01	2.D.27		Materials Analysis Equipment Controller		1049	
		10	01	4.A.02	Radio Communicator		0206		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
33	Refurbish experiment apparatus	19	01	2.D.13	-2	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	2.D.13	-4	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		19	01	2.D.29		Zone Melter Cleaner	1412
		19	01	4.D.06		" " "	1412
		19	01	2.D.46		Calorimeter Cleaner	1500
		19	01	4.D.06		" "	1500
		19	01	2.D.48		Friction Measuring Device Cleaner	1498
		19	01	4.D.06		" " " "	1498
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		21	01	2.D.13	-4	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
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DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation		BASIC FUNCTION: 09 Scheduled Maintenance					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	20	01	2.D.13	-3	Environmental Chamber Assembler	1064
		20	01	2.D.13	-4	" " "	1064
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.52		VHF Power Unit Disassembler	1100

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-09-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.B.06	Computer Disassembler	1056
		20	01	2.B.06	Computer Assembler	1057
		26	01	2.B.06	Computer Module Remover	0519
		27	01	2.B.06	Computer Module Installer	0520
		21	01	4.D.14	Heat Rejection System Disassembler	1147
		20	01	4.D.14	Heat Rejection System Assembler	1148
		26	01	4.D.14	Heat Rejection System Module Remover	1143
		27	01	4.D.14	Heat Rejection System Module Installer	1144
		21	01	2.D.27	Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27	Materials Analysis Equipment Assembler	1051
		26	01	2.D.27	Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer	1045
		21	01	2.D.24	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.24	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-09-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
BASIC FUNCTION: 09 Scheduled Maintenance						
CREW TASK STATEMENT		CREW FUNC NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221
		21	01	2.A.04 -3	TV Camera Disassembler	0900
		20	01	2.A.04 -3	TV Camera Assembler	0901
		26	01	2.A.04 -3	TV Camera Module Remover	0111
		27	01	2.A.04 -3	TV Camera Module Installer	0112
		21	01	2.A.43	Holographic Device Disassembler	1231
		20	01	2.A.43	Holographic Device Assembler	1230
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234
		21	01	2.D.32	Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32	Heating/Positioning Coil Assembler	1261
		26	01	2.D.32	Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32	Heating/Positioning Coil Module Installer	1265
		21	01	2.D.29	Zone Melter Disassembler	1414
		20	01	2.D.29	Zone Melter Assembler	1438
		26	01	2.D.29	Zone Melter Module Remover	1410
		27	01	2.D.29	Zone Melter Module Installer	1411
		21	01	2.D.46	Calorimeter Disassembler	1476
		20	01	2.D.46	Calorimeter Assembler	1475
		26	01	2.D.46	Calorimeter Module Remover	1478
		27	01	2.D.46	Calorimeter Module Installer	1477
		21	01	2.D.48	Friction Measuring Device Disassembler	1486
		20	01	2.D.48	Friction Measuring Device Assembler	1485

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EXPERIMENT:

MISSION MODE: A

2.4 Crystal Growth; Supercooling and Homogeneous Nucleation

BASIC FUNCTION: 09 Scheduled Maintenance

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		21	01	2.D.13	-4	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		20	01	2.D.13	-4	" " "	1064
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-2.4-10-2
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE:	A
						BASIC FUNCTION:	10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127	
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128	
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137	
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138	
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134	
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135	
		21	01	2.D.52	VHF Power Unit Disassembler	1100	
		20	01	2.D.52	VHF Power Unit Assembler	1101	
		26	01	2.D.52	VHF Power Unit Module Remover	1095	
		27	01	2.D.52	VHF Power Unit Module Installer	1096	
		21	01	2.B.06	-1 Computer Disassembler	1056	
		20	01	2.B.06	-1 Computer Assembler	1057	
		26	01	2.B.06	-1 Computer Module Remover	0519	
		27	01	2.B.06	-1 Computer Module Installer	0520	
		21	01	4.D.14	Heat Rejection System Disassembler	1147	
		20	01	4.D.14	Heat Rejection System Assembler	1148	
		26	01	4.D.14	Heat Rejection System Module Remover	1143	
		27	01	4.D.14	Heat Rejection System Module Installer	1144	
		21	01	2.D.27	Materials Analysis Equipment Disassembler	1050	
		20	01	2.D.27	Materials Analysis Equipment Assembler	1051	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.D.27	Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer	1045
		21	01	2.D.24	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.24	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225
		26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221
		21	01	2.A.04	-3 TV Camera Disassembler	0900
		20	01	2.A.04	-3 TV Camera Assembler	0901
		26	01	2.A.04	-3 TV Camera Module Remover	0111
		27	01	2.A.04	-3 TV Camera Module Installer	0112
		21	01	2.A.43	Holographic Device Disassembler	1231
		20	01	2.A.43	Holographic Device Assembler	1230
		26	01	2.A.43	Holographic Device Module Remover	1235
		27	01	2.A.43	Holographic Device Module Installer	1234
		21	01	2.D.32	Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32	Heating/Positioning Coil Assembler	1261
		26	01	2.D.32	Heating/Positioning Coil Module Remover	1266

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
34	(Continued)	27	01	2.D.32		Heating/Positioning Coil Module Installer 1265
		21	01	2.D.29		Zone Melter Disassembler 1414
		20	01	2.D.29		Zone Melter Assembler 1438
		26	01	2.D.29		Zone Melter Module Remover 1410
		27	01	2.D.29		Zone Melter Module Installer 1411
		21	01	2.D.46		Calorimeter Disassembler 1476
		20	01	2.D.46		Calorimeter Assembler 1475
		26	01	2.D.46		Calorimeter Module Remover 1478
		27	01	2.D.46		Calorimeter Module Installer 1477
		21	01	2.D.48		Friction Measuring Device Disassembler 1486
		20	01	2.D.48		Friction Measuring Device Assembler 1485
		26	01	2.D.48		Friction Measuring Device Module Remover 1490
		27	01	2.D.48		Friction Measuring Device Module Installer 1489
48	Repair experiment equipment	07	01	2.D.13	-2	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier 1066
		07	01	2.D.13	-4	Environmental Chamber Fault Identifier 1066
		07	01	4.C.02		Environmental Chamber Fault Identifier 1066
		28	01	2.D.13	-2	Environmental Chamber Repairer 1065
		28	01	2.D.13	-3	" " " 1065

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGEA-2.4-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	28	01	2.D.13	-4	Environmental Chamber Repairer	1065
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.52		VHF Power Unit Fault Identifier	1103
		07	01	4.C.02		" " " " "	1103
		28	01	2.D.52		VHF Power Unit Repairer	1102
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540
		07	01	4.D.14		Heat Rejection System Fault Identifier	1150
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150
		28	01	4.D.14		Heat Rejection System Repairer	1149

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-2.4-10-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 2.4 Crystal Growth; Supercooling and Homogeneous Nucleation					MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053
		07	01	2.D.34	Atmosphere Analysis Unit Fault Identifier	1210
		07	01	4.C.02	Atmosphere Analysis Unit Fault Identifier	1210
		28	01	2.D.34	Atmosphere Analysis Unit Repairer	1211
		07	01	2.A.44	Viewing Device Fault Identifier	1222
		07	01	4.C.02	" " " "	1222
		28	01	2.A.44	Viewing Device Repairer	1223
		07	01	2.A.04	-3 TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689
		28	01	2.A.04	-3 TV Camera Repairer	0690
		07	01	2.A.43	Holographic Device Fault Identifier	1233
		07	01	4.C.02	Holographic Device Fault Identifier	1233
		28	01	2.A.43	Holographic Device Repairer	1232
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		07	01	2.D.32	Heating/Positioning Coil Fault Identifier	1264
		07	01	4.C.02	Heating/Positioning Coil Fault Identifier	1264
		28	01	2.D.32	Heating/Positioning Coil Repairer	1263
		07	01	2.D.29	Zone Melter Fault Identifier	1439
		07	01	4.C.02	" " " "	1439

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-2.4-10-7	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
2.4 Crystal Growth; Supercooling and Homogeneous Nucleation						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	28	01	2.D.29	Zone Melter Repairer	1440	
		07	01	2.D.46	Calorimeter Fault Identifier	0376	
		07	01	2.D.46	" " "	0376	
		28	01	2.D.46	Calorimeter Repairer	1474	
		07	01	2.D.48	Friction Measuring Device Fault Identifier	1484	
		07	01	2.D.48	Friction Measuring Device Fault Identifier	1484	
		28	01	2.D.48	Friction Measuring Device Repairer	1483	

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE): -

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Glass Processes

3.1 Preparation of Glasses

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.1-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A
3.1 Glass Processes; Preparation of Glasses				BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
1	Set up apparatus in prescribed configurations	18	01	2.C.26	Glass Samples Unstower	1513
		22	01	2.C.26	Glass Samples Translocator	1514
		27	01	2.C.26	Glass Samples Installer	1515
		18	01	2.D.13	Environmental Chamber Unstower	1058
		18	01	2.D.13	" " "	1058
		18	01	2.B.06	Computer Unstower	1054
		18	01	2.B.06	Materials Science C/D Equipment	1161
					Unstower	
		18	01	2.D.15	Atmosphere Supply/Control System	1162
					Unstower	
		18	01	4.D.13	Power Conditioning/Distribution	1163
					System Unstower	
		18	01	2.D.24	Furnace Unstower	0980
		18	01	2.D.24	" "	0980
		18	01	2.D.32	Heating/Positioning Coil Unstower	1271
		22	01	2.D.32	Heating/Positioning Coil	1270
					Translocator	
		27	01	2.D.32	Heating/Positioning Coil	1269
					Installer	
		18	01	2.D.33	Plasma Beam Unit Unstower	1284
		22	01	2.D.33	Plasma Beam Unit Translocator	1283
		27	01	2.D.33	Plasma Beam Unit Installer	1282
		18	01	2.D.20	Internal Attachments Unstower	1152
		22	01	2.D.20	Internal Attachments Translocator	1153
		27	01	2.D.20	Internal Attachments Installer	1151
		18	01	2.D.34	Atmosphere Analysis Unit Unstower	1203
		22	01	2.D.34	Atmosphere Analysis Unit	1204
					Translocator	
		27	01	2.D.34	Atmosphere Analysis Unit	1205
					Installer	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.1-04-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE: A	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	(Continued)	18	01	2.A.44		Viewing Device Unstower	1215
		22	01	2.A.44		Viewing Device Translocator	1216
		27	01	2.A.44		Viewing Device Installer	1217
		18	01	2.A.43		Holographic Device Unstower	1240
		22	01	2.A.43		Holographic Device Translocator	1239
		27	01	2.A.43		Holographic Device Installer	1238
		18	01	2.D.52		VHF Power Unit Unstower	1092
		22	01	2.D.52		VHF Power Unit Translocator	1093
		27	01	2.D.52		VHF Power Unit Installer	1091
		18	01	4.D.14		Heat Rejection System Unstower	1142
2	Place samples in processing equipment	27	01	2.C.26		Glass Sample Installer	1515
		27	01	2.D.13	-1	" " "	1515
		27	01	2.D.13	-3	" " "	1515
		27	01	2.D.24	-2	" " "	1515
		27	01	2.D.24	-3	" " "	1515
		27	01	2.D.32		" " "	1515
10	Conduct voice conferences with ground experiment personnel	05	01	3.I.06	-1	Radio Communicator	0206
		05	01	4.A.02		" "	0206
11	Set up TV Camera	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1
							PAGE	A-3.1-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:			MISSION MODE: A					
3.1 Glass Processes; Preparation of Glasses					BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator	0847	
		15	01	3.I.04	-1	" " "	0847	
		15	01	2.C.26		" " "	0847	
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059	
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059	
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060	
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060	
		26	01	2.C.26		Glass Sample Remover	1516	
		27	01	2.C.26		Glass Sample Installer	1515	
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330	
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172	
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034	
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035	
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127	
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128	
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134	
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.1-04-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A				
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.D.24	-3	Furnace Module Remover	0981
		26	01	2.D.24	-2	" " "	0981
		27	01	2.D.24	-3	Furnace Module Installer	0982
		27	01	2.D.24	-2	" " "	0982
		26	01	2.D.32		Heating/Positioning Coil Remover	1268
		27	01	2.D.32		Heating/Positioning Coil Installer	1269
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		26	01	2.D.33		Plasma Beam Unit Remover	1281
		27	01	2.D.33		Plasma Beam Unit Installer	1282
		26	01	2.D.33		Plasma Beam Unit Module Remover	1279
		27	01	2.D.33		Plasma Beam Unit Module Installer	1278
		26	01	2.D.20		Internal Attachments Remover	1154
		27	01	2.D.20		Internal Attachments Installer	1151
		26	01	2.D.34		Atmosphere Analysis Unit Remover	1206
		27	01	2.D.34		Atmosphere Analysis Unit Installer	1205
		26	01	2.D.34		Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34		Atmosphere Analysis Unit Module Installer	1209
		26	01	2.A.44		Viewing Device Remover	1218
		27	01	2.A.44		Viewing Device Installer	1217
		26	01	2.A.04	-3	TV Camera Remover	0661
		27	01	2.A.04	-3	TV Camera Installer	0306
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		26	01	2.D.52		VHF Power Unit Remover	1094

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.1-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE:	A
3.1 Glass Processes; Preparation of Glasses					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	27	01	2.D.52	VHF Power Unit Installer	1091	
		26	01	2.D.52	VHF Power Unit Module Remover	1095	
		27	01	2.D.52	VHF Power Unit Module Installer	1096	
		26	01	2.A.43	Holographic Device Remover	1237	
		27	01	2.A.43	Holographic Device Installer	1238	
		26	01	2.A.43	Holographic Device Module Remover	1235	
		27	01	2.A.43	Holographic Device Module Installer	1234	
		26	01	4.D.14	Heat Rejection System Module Remover	1143	
		27	01	4.D.14	Heat Rejection System Module Installer	1144	
35	Calibrate instruments	08	01	2.D.27	Materials Analysis Equipment Calibrator	1046	
		08	01	4.C.01	Materials Analysis Equipment Calibrator	1046	
		08	01	2.D.52	VHF Power Unit Calibrator	1097	
		08	01	4.C.01	" " " "	1097	
		08	01	2.D.32	Heating/Positioning Coil Calibrator	1333	
		08	01	4.C.01	Heating/Positioning Coil Calibrator	1333	
		08	01	2.D.33	Plasma Beam Unit Calibrator	1334	
		08	01	4.C.01	" " " "	1334	
		08	01	2.A.43	Holographic Device Calibrator	1227	
		08	01	4.C.01	" " " "	1227	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-04-6	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
3.1 Glass Processes; Preparation of Glasses			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
50	Checkout optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	2.A.43		Holographic Device Tester	1449
		14	01	2.B.06	-2	" " "	1449
		01	01	2.B.06	-2	" " "	1449

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.1-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.24	-3	Furnace Cleaner	0984
		19	01	2.D.24	-2	" "	0984
		19	01	4.D.06		" "	0984
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.33		Plasma Beam Unit Cleaner	1337
		19	01	4.D.06		" " " "	1337
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
4	Secure apparatus	19	01	2.C.26		Glass Samples Stower	1517
		22	01	2.C.26		Glass Samples Translocator	1514
		26	01	2.C.26		Glass Samples Remover	1516
		19	01	2.D.13	-1	Environmental Chamber Stower	1061
		19	01	2.D.13	-3	" " "	1061
		19	01	2.B.06	-1	Computer Stower	1160
		19	01	2.B.06	-2	Materials Science C/D Equipment Stower	1168
		19	01	2.D.15		Atmosphere Supply/Control System Stower	1169
		19	01	4.D.13		Power Conditioning/Distribution System Stower	1170
		19	01	2.D.24	-3	Furnace Stower	0983
		19	01	2.D.24	-2	" "	0983
		19	01	2.D.32		Heating/Positioning Coil Stower	1267
		22	01	2.D.32		Heating/Positioning Coil Translocator	1270

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.1-05-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses		MISSION MODE: A					
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	(Continued)	26	01	2.D.32		Heating/Positioning Coil Remover	1268
		19	01	2.D.33		Plasma Beam Unit Stower	1280
		22	01	2.D.33		Plasma Beam Unit Translocator	1283
		26	01	2.D.33		Plasma Beam Unit Remover	1281
		19	01	2.D.20		Internal Attachments Stower	1155
		22	01	2.D.20		Internal Attachments Translocator	1153
		26	01	2.D.20		Internal Attachments Remover	1154
		19	01	2.D.34		Atmosphere Analysis Unit Stower	1207
		22	01	2.D.34		Atmosphere Analysis Unit Translocator	1204
		26	01	2.D.34		Atmosphere Analysis Unit Remover	1206
		19	01	2.A.44		Viewing Device Stower	1219
		22	01	2.A.44		Viewing Device Translocator	1216
		26	01	2.A.44		Viewing Device Remover	1218
		19	01	2.A.04	-3	TV Camera Stower	0064
		22	01	2.A.04	-3	TV Camera Translocator	0026
		26	01	2.A.04	-3	TV Camera Remover	0661
		19	01	2.A.43		Holographic Device Stower	1236
		22	01	2.A.43		Holographic Device Translocator	1239
		26	01	2.A.43		Holographic Device Remover	1237
		19	01	2.D.52		VHF Power Unit Stower	1098
		22	01	2.D.52		VHF Power Unit Translocator	1093
		26	01	2.D.52		VHF Power Unit Remover	1094
		19	01	4.D.14		Heat Rejection System Stower	1145

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-06-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
3.1 Glass Processes; Preparation of Glasses			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Monitor experiment atmosphere control equipment	01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343
6	Perform optical tests for glass homogeneity	12	01	2.C.26	-1	Glass Structure Analyzer	1518
		12	01	3.I.06		" " "	1518
		12	01	2.D.27		" " "	1518
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	2.C.26		Materials Analysis Equipment Controller	1049
		10	01	3.I.06	-1	Materials Analysis Equipment Controller	1049
7	Perform optical tests for crystallinity	12	01	2.C.26	-1	Glass Structure Analyzer	1518
		12	01	3.I.06		" " "	1518
		12	01	2.D.27		" " "	1518
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	3.I.06	-1	Materials Analysis Equipment Controller	1049
		10	01	2.C.26		Materials Analysis Equipment Controller	1049

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.1-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE: A	
BASIC FUNCTION: 06 Experiment Conduct							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	Prepare photographs of glass samples	15	01	4.D.04	-3	Camera Control Actuator	0245
		15	01	2.C.26		" " "	0245
		15	01	3.I.06	-1	" " "	0245
		15	01	2.D.27		" " "	0245
		06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159
9	Transmit photographs to ground	10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.04	-6	" " "	1104
10	Conduct voice conferences with ground personnel	05	01	3.I.06	-1	Radio Communicator	0206
		05	01	4.A.02		" "	0206
11	Activate data transmission as required	15	01	4.A.01		Telemetry Equipment Control Actuator	0662
		15	01	4.A.02		Radio Communicator	0206
		15	01	4.A.04		Data Compression Equipment Control Actuator	1550
		15	01	2.A.04		TV System Control Actuator	1549
13	Initiate experiment run	15	01	2.B.06	-2	Plasma Beam Unit Control Actuator	1273
		15	01	2.D.33		" " " " "	1273
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1318
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1318

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.1-06-3
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE:	A
						BASIC FUNCTION:	06 Experiment Conduct
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	(Continued)	15	01	2.B.66	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173
		15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-3	" " "	1175
		15	01	2.D.24	-2	" " "	1175
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183
		15	01	2.D.52		" " " " "	1183
		15	01	2.B.06	-2	Computer Control Actuator	0847

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.1-06-4
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses		MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	(Continued)	15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184
14	Monitor experiment conduct	01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.05	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-2	" " "	0985
		01	01	2.D.24	-3	" " "	0985
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " " "	1099

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-06-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
3.1 Glass Processes; Preparation of Glasses						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	(Continued)	01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Materials Science C/D Equipment Operation Monitor	1501
		01	01	2.B.06	-2	Plasma Beam Unit Operation Monitor	1272
		01	01	2.D.33		" " " " "	1272
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.B.06	-2	Holographic Device Operation Monitor	1228
		01	01	2.A.43		Holographic Device Operation Monitor	1228
36	Schedule experiment runs	13	01	2.B.06	-1	Glass Processing Research Planner	1521
		13	01	2.B.06	-2	" " " "	1521
		13	01	3.I.06	-1	" " " "	1521
		13	01	2.C.26		" " " "	1521
37	Define apparatus configuration	13	01	3.I.06	-1	Glass Processing Research Planner	1521
		13	01	2.C.26		" " " "	1521
		13	01	2.D.13	-1	" " " "	1521
		13	01	2.D.13	-3	" " " "	1521
		13	01	2.B.06	-2	" " " "	1521

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.1-06-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A				
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.D.15		Glass Processing Research Planner	1521
		13	01	4.D.13		" " " "	1521
		13	01	2.D.24	-2	" " " "	1521
		13	01	2.D.24	-3	" " " "	1521
		13	01	2.D.32		" " " "	1521
		13	01	2.D.33		" " " "	1521
		13	01	2.D.20		" " " "	1521
		13	01	2.D.34		" " " "	1521
		13	01	2.A.44		" " " "	1521
		13	01	2.A.43		" " " "	1521
		13	01	2.D.52		" " " "	1521
		13	01	2.B.06	-1	" " " "	1521
		13	01	4.D.14		" " " "	1521
40	Evaluate experiment results	11	01	3.I.06	-1	Glass Processing Research Evaluator	1522
		11	01	2.C.26		Glass Processing Research Evaluator	1522
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							PAGE A-3.1-09-1
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses							MISSION MODE: A
BASIC FUNCTION: 09 Scheduled Maintenance							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Module Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.1-09-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses					MISSION MODE: A	
					BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	Furnace Disassembler	0986
		20	01	2.D.24	Furnace Assembler	0987
		26	01	2.D.24	Furnace Module Remover	0981
		21	01	2.D.52	VHF Power Unit Disassembler	1100
		20	01	2.D.52	VHF Power Unit Assembler	1101
		26	01	2.D.52	VHF Power Unit Module Remover	1095
		27	01	2.D.52	VHF Power Unit Module Installer	1096
		21	01	2.D.34	Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.34	Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44	Viewing Device Disassembler	1224
		20	01	2.A.44	Viewing Device Assembler	1225
		26	01	2.A.44	Viewing Device Module Remover	1220
		27	01	2.A.44	Viewing Device Module Installer	1221
		21	01	2.A.04	TV Camera Disassembler	0900
		20	01	2.A.04	TV Camera Assembler	0901
		26	01	2.A.04	TV Camera Module Remover	0111
		27	01	2.A.04	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.1-09-3
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE:	A
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.A.43		Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.24	-3	Furnace Disassembler	0986
		20	01	2.D.24	-3	Furnace Assembler	0987
		26	01	2.D.24	-3	Furnace Module Remover	0981
		27	01	2.D.24	-3	Furnace Module Installer	0982
		21	01	2.D.32		Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32		Heating/Positioning Coil Assembler	1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		21	01	2.D.33		Plasma Beam Unit Disassembler	1275
		20	01	2.D.33		Plasma Beam Unit Assembler	1274
		26	01	2.D.33		Plasma Beam Unit Module Remover	1279
		27	01	2.D.33		Plasma Beam Unit Module Installer	1278
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-09-4	
DISCIPLINE Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
34	(Continued)	27	01	4.D.14	Heat Rejection System Module Installer		1144
		21	01	2.D.27	Materials Analysis Equipment Disassembler		1050
		20	01	2.D.27	Materials Analysis Equipment Assembler		1051
		26	01	2.D.27	Materials Analysis Equipment Module Remover		1044
		27	01	2.D.27	Materials Analysis Equipment Module Installer		1045
		27	01	2.D.24	-2	Furnace Module Installer	0982

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.1-10-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A				
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-10-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-2	Furnace Disassembler	0986
		20	01	2.D.24	-2	Furnace Assembler	0987
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-2	Furnace Module Installer	0982
		21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.D.34		Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.34		Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34		Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34		Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44		Viewing Device Disassembler	1224
		20	01	2.A.44		Viewing Device Assembler	1225
		26	01	2.A.44		Viewing Device Module Remover	1220
		27	01	2.A.44		Viewing Device Module Installer	1221
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.1-10-3
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses						MISSION MODE:	A
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.43	-3	Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.24	-3	Furnace Disassembler	0986
		20	01	2.D.24	-3	Furnace Assembler	0987
		26	01	2.D.24	-3	Furnace Module Remover	0981
		27	01	2.D.24	-3	Furnace Module Installer	0982
		21	01	2.D.32		Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32		Heating/Positioning Coil Assembler	1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		21	01	2.D.33		Plasma Beam Unit Disassembler	1275
		20	01	2.D.33		Plasma Beam Unit Assembler	1274
		26	01	2.D.33		Plasma Beam Unit Module Remover	1279
		27	01	2.D.33		Plasma Beam Unit Module Installer	1278
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.1-10-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-3	" " "	1065
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.1-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A			
			BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	4.C.02	Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15	Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13	Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02	Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13	Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24	Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24	Furnace Repairer	0988
		07	01	2.D.52	VHF Power Unit Fault Identifier	1103
		07	01	4.C.02	" " " " "	1103
		28	01	2.D.52	VHF Power Unit Repairer	1102
		07	01	2.B.06	Computer Fault Identifier	0523
		07	01	4.C.02	" " "	0523
		28	01	2.B.06	Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150
		07	01	4.C.02	Heat Rejection System Fault Identifier	1150
		28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.1-10-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.1 Glass Processes; Preparation of Glasses			MISSION MODE: A			
			BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		07	01	2.D.24	Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24	Furnace Repairer	0988
		07	01	2.D.32	Heating/Positioning Coil Fault Identifier	1264
		07	01	4.C.02	Heating/Positioning Coil Fault Identifier	1264
		28	01	2.D.32	Heating/Positioning Coil Repairer	1263
		07	01	2.D.33	Plasma Beam Unit Fault Identifier	1277
		07	01	4.C.02	" " " " "	1277
		28	01	2.D.33	Plasma Beam Unit Repairer	1276
		07	01	2.D.34	Atmosphere Analysis Unit Fault Identifier	1210
		07	01	4.C.02	Atmosphere Analysis Unit Fault Identifier	1210
		28	01	2.D.34	Atmosphere Analysis Unit Repairer	1211
		07	01	2.A.44	Viewing Device Fault Identifier	1222
		07	01	4.C.02	" " " "	1222
		28	01	2.A.44	Viewing Device Repairer	1223
		07	01	2.A.04	TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689
		28	01	2.A.04	TV Camera Repairer	0690
		07	01	2.A.43	Holographic Device Fault Identifier	1233
		07	01	4.C.02	Holographic Device Fault Identifier	1233
		28	01	2.A.43	Holographic Device Repairer	1232

DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Glass Processes

3.2 Glass Processing

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-04-1
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:						MISSION MODE: A	
3.2 Glass Processes; Glass Processing				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
1	Set up apparatus in prescribed configurations	18	01	2.C.26		Glass Samples Unstower	1513
		22	01	2.C.26		Glass Samples Translocator	1514
		27	01	2.C.26		Glass Samples Installer	1515
		18	01	2.D.13	-1	Environmental Chamber Unstower	1058
		18	01	2.D.13	-3	" " "	1058
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.24	-3	Furnace Unstower	0980
		18	01	2.D.24	-2	" "	0980
		18	01	2.D.32		Heating/Positioning Coil Unstower	1271
		22	01	2.D.32		Heating/Positioning Coil Translocator	1270
		27	01	2.D.32		Heating/Positioning Coil Installer	1269
		18	01	2.D.33		Plasma Beam Unit Unstower	1284
		22	01	2.D.33		Plasma Beam Unit Translocator	1283
		27	01	2.D.33		Plasma Beam Unit Installer	1282
		18	01	2.D.20		Internal Attachments Unstower	1152
		22	01	2.D.20		Internal Attachments Translocator	1153
		27	01	2.D.20		Internal Attachments Installer	1151
		18	01	2.D.34		Atmosphere Analysis Unit Unstower	1203
		22	01	2.D.34		Atmosphere Analysis Unit Translocator	1204
		27	01	2.D.34		Atmosphere Analysis Unit Installer	1205

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.2-04-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.2 Glass Processes; Glass Processing					MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
1	(Continued)	18	01	2.A.44		Viewing Device Unstower 1215
		22	01	2.A.44		Viewing Device Translocator 1216
		27	01	2.A.44		Viewing Device Installer 1217
		18	01	2.A.43		Holographic Device Unstower 1240
		22	01	2.A.43		Holographic Device Translocator 1239
		27	01	2.A.43		Holographic Device Installer 1238
		18	01	2.D.52		VHF Power Unit Unstower 1092
		22	01	2.D.52		VHF Power Unit Translocator 1093
		27	01	2.D.52		VHF Power Unit Installer 1091
		18	01	4.D.14		Heat Rejection System Unstower 1142
2	Place samples in processing equipment	27	01	2.C.26		Glass Sample Installer 1515
		27	01	2.D.13	-1	" " " 1515
		27	01	2.D.13	-3	" " " 1515
		27	01	2.D.24	-2	" " " 1515
		27	01	2.D.24	-3	" " " 1515
		27	01	2.D.32		" " " 1515
6	Activate process parameter recording system	15	01	4.D.10		Data Recorder Control Actuator 1399
		15	01	3.I.06	-2	" " " " 1399
32	Reconfigure experiments	15	01	2.B.06	-1	Computer Control Actuator 0847
		15	01	3.I.06	-2	" " " 0847
		15	01	2.C.26		" " " 0847
		26	01	2.D.13	-1	Environmental Chamber Module Remover 1059

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-04-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE:	A
3.2 Glass Processes; Glass Processing						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		26	01	2.C.26		Glass Sample Remover	1516
		27	01	2.C.26		Glass Sample Installer	1515
		16	01	2.B.06	-2	Materials Science C/D Equipment Control Deactuator	1330
		15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.24	-3	Furnace Module Remover	0981
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-3	Furnace Module Installer	0982
		27	01	2.D.24	-2	" " "	0982
		26	01	2.D.32		Heating/Positioning Coil Remover	1268
		27	01	2.D.32		Heating/Positioning Coil Installer	1269

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-04-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
3.2 Glass Processes; Glass Processing					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
32	(Continued)	26	01	2.D.32	Heating/Positioning Coil Module Remover		1266
		27	01	2.D.32	Heating/Positioning Coil Module Installer		1265
		26	01	2.D.33	Plasma Beam Unit Remover		1281
		27	01	2.D.33	Plasma Beam Unit Installer		1282
		26	01	2.D.33	Plasma Beam Unit Module Remover		1279
		27	01	2.D.33	Plasma Beam Unit Module Installer		1278
		26	01	2.D.20	Internal Attachments Remover		1154
		27	01	2.D.20	Internal Attachments Installer		1151
		26	01	2.D.34	Atmosphere Analysis Unit Remover		1206
		27	01	2.D.34	Atmosphere Analysis Unit Installer		1205
		26	01	2.D.34	Atmosphere Analysis Unit Module Remover		1208
		27	01	2.D.34	Atmosphere Analysis Unit Module Installer		1209
		26	01	2.A.44	Viewing Device Remover		1218
		27	01	2.A.44	Viewing Device Installer		1217
		26	01	2.A.04	-3 TV Camera Remover		0661
		27	01	2.A.04	-3 TV Camera Installer		0306
		26	01	2.A.04	-3 TV Camera Module Remover		0111
		27	01	2.A.04	-3 TV Camera Module Installer		0112
		26	01	2.D.52	VHF Power Unit Remover		1094
		27	01	2.D.52	VHF Power Unit Installer		1091
		26	01	2.D.52	VHF Power Unit Module Remover		1095
		27	01	2.D.52	VHF Power Unit Module Installer		1096
		26	01	2.A.43	Holographic Device Remover		1237
		27	01	2.A.43	Holographic Device Installer		1238
		26	01	2.A.43	Holographic Device Module Remover		1235

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3.2-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
3.2 Glass Processes; Glass Processing					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.A.43		Holographic Device Module Installer	1234
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
		08	01	2.D.52		VHF Power Unit Calibrator	1097
		08	01	4.C.01		" " " "	1097
		08	01	2.D.32		Heating/Positioning Coil Calibrator	1333
		08	01	4.C.01		Heating/Positioning Coil Calibrator	1333
		08	01	2.D.33		Plasma Beam Unit Calibrator	1334
		08	01	4.C.01		" " " "	1334
		08	01	2.A.43		Holographic Device Calibrator	1227
		08	01	4.C.01		" " " "	1227
43	Install TV cameras	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.2-04-6
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE:	A
						BASIC FUNCTION:	04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
46	Install data recording system	18	01	4.D.10		Data Recorder Unstower	1519
		22	01	4.D.10		Data Recorder Translocator	1520
		27	01	4.D.10		Data Recorder Installer	1156
50	Check out optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	2.A.43		Holographic Device Tester	1449
		14	01	2.B.06	-2	" " "	1449
		01	01	2.B.06	-2	" " "	1449

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.2-05-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
3.2 Glass Processes; Glass Processing			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Refurbish experiment apparatus	19	01	2.D.13	-1	Environmental Chamber Cleaner	1062
		19	01	2.D.13	-3	" " "	1062
		19	01	4.D.06		" " "	1062
		19	01	2.D.24	-3	Furnace Cleaner	0984
		19	01	2.D.24	-2	" "	0984
		19	01	4.D.06		" "	0984
		19	01	2.D.32		Heating/Positioning Coil Cleaner	1336
		19	01	4.D.06		" " " "	1336
		19	01	2.D.33		Plasma Beam Unit Cleaner	1337
		19	01	4.D.06		" " " "	1337
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
4	Secure apparatus	17	01	2.C.26		Glass Samples Stower	1517
		22	01	2.C.26		Glass Samples Translocator	1514
		26	01	2.C.26		Glass Samples Remover	1516
		17	01	2.D.13	-1	Environmental Chamber Stower	1061
		17	01	2.D.13	-3	" " "	1061
		17	01	2.B.06	-1	Computer Stower	1160
		17	01	2.B.06	-2	Materials Science C/D Equipment Stower	1168
		17	01	2.D.15		Atmosphere Supply/Control System Stower	1169
		17	01	4.D.13		Power Conditioning/Distribution System Stower	1170
		17	01	2.D.24	-3	Furnace Stower	0983
		17	01	2.D.24	-2	" "	0983

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.2-05-2
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						MISSION MODE: A
EXPERIMENT: 3.2 Glass Processes; Glass Processing						BASIC FUNCTION: 05 Experiment Shutdown
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
4	(Continued)	17	01	2.D.32	Heating/Positioning Coil Stower	1267
		22	01	2.D.32	Heating/Positioning Coil Translocator	1270
		26	01	2.D.32	Heating/Positioning Coil Remover	1268
		17	01	2.D.32	Plasma Beam Unit Stower	1280
		22	01	2.D.33	Plasma Beam Unit Translocator	1283
		26	01	2.D.33	Plasma Beam Unit Remover	1281
		17	01	2.D.20	Internal Attachments Stower	1155
		22	01	2.D.20	Internal Attachments Translocator	1153
		26	01	2.D.20	Internal Attachments Remover	1154
		17	01	2.D.34	Atmosphere Analysis Unit Stower	1207
		22	01	2.D.34	Atmosphere Analysis Unit Translocator	1204
		26	01	2.D.34	Atmosphere Analysis Unit Remover	1206
		17	01	2.A.44	Viewing Device Stower	1219
		22	01	2.A.44	Viewing Device Translocator	1216
		26	01	2.A.44	Viewing Device Remover	1218
		17	01	2.A.04 -3	TV Camera Stower	0064
		22	01	2.A.04 -3	TV Camera Stower Translocator	0026
		26	01	2.A.04 -3	TV Camera Remover	0661
		17	01	2.A.43	Holographic Device Stower	1236
		22	01	2.A.43	Holographic Device Translocator	1239
		26	01	2.A.43	Holographic Device Remover	1237
		17	01	2.D.52	VHF Power Unit Stower	1098
		22	01	2.D.42	VHF Power Unit Translocator	1093
		26	01	2.D.52	VHF Power Unit Remover	1094
		17	01	4.D.14	Heat Rejection System Stower	1145

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-3,2-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
3.2 Glass Processes; Glass Processing					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Monitor experiment atmosphere control equipment	01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor	1343
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor	1343
6	Evaluate gross integrity of samples	02	01	2.C.26		Glass Sample Observer	1523
		02	01	3.I.06	-2	" " "	1523
		11	01	3.I.06	-2	Glass Processing Research Evaluator	1522
8	Initiate experiment run	15	01	2.B.06	-2	Plasma Beam Unit Control Actuator	1273
		15	01	2.D.33		" " " " "	1273
		15	01	2.B.06	-2	Atmosphere Analysis Unit Control Actuator	1318
		15	01	2.D.34		Atmosphere Analysis Unit Control Actuator	1318
		15	01	2.B.66	-2	TV Camera Control Actuator	0899
		15	01	2.A.04	-3	" " " "	0899
		15	01	2.B.06	-2	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-1	Environmental Chamber Control Actuator	1173
		15	01	2.D.13	-3	Environmental Chamber Control Actuator	1173

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-06-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	(Continued)	15	01	2.B.06	-2	Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.D.15		Atmosphere Supply/Control System Control Actuator	1174
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-2	Furnace Control Actuator	1175
		15	01	2.D.24	-3	" " "	1175
		15	01	2.D.24	-2	" " "	1175
		15	01	2.B.06	-2	Heating/Positioning Coil Control Actuator	1260
		15	01	2.D.32		Heating/Positioning Coil Control Actuator	1260
		15	01	2.B.06	-2	Holographic Device Control Actuator	1229
		15	01	2.A.43		Holographic Device Control Actuator	1229
		15	01	2.B.06	-2	VHF Power Unit Control Actuator	1183
		15	01	2.D.52		" " " " "	1183
		15	01	2.B.06	-2	Computer Control Actuator	0847
		15	01	2.B.06	-1	" " "	0847
		15	01	2.B.06	-2	Heat Rejection System Control Actuator	1184
		15	01	4.D.14		Heat Rejection System Control Actuator	1184

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.2-06-3
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Monitor experiment conduct	01	01	2.D.32		Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Heating/Positioning Coil Operation Monitor	1259
		01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-1	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.05	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-2	" " "	0985
		01	01	2.D.24	-3	" " "	0985
		01	01	2.B.06	-2	VHF Power Unit Operation Monitor	1099
		01	01	2.D.52		" " " " "	1099
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Materials Science C/D Equipment Operation Monitor	1501

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-3.2-06-4		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT: 3.2 Glass Processes; Glass Processing			BASIC FUNCTION: 06 Experiment Conduct					MISSION MODE: A	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
9	(Continued)	01	01	2.B.06	-2	Plasma Beam Unit Operation Monitor		1272	
		01	01	2.D.33		" " " " "		1272	
		01	01	2.B.06	-2	Atmosphere Analysis Unit Operation Monitor		1343	
		01	01	2.D.34		Atmosphere Analysis Unit Operation Monitor		1343	
		01	01	2.B.06	-2	Holographic Device Operation Monitor		1228	
		01	01	2.A.43		Holographic Device Operation Monitor		1228	
36	Schedule experiment runs	13	01	2.B.06	-1	Glass Processing Research Planner		1521	
		13	01	2.B.06	-2	" " " "		1521	
		13	01	3.I.06	-2	" " " "		1521	
		13	01	2.C.26		" " " "		1521	
37	Define apparatus configuration	13	01	3.I.06	-2	Glass Processing Research Planner		1521	
		13	01	2.C.26		" " " "		1521	
		13	01	2.D.13	-1	" " " "		1521	
		13	01	2.D.13	-3	" " " "		1521	
		13	01	2.B.06	-2	" " " "		1521	
		13	01	2.D.15		" " " "		1521	
		13	01	4.D.13		" " " "		1521	
		13	01	2.D.24	-2	" " " "		1521	
		13	01	2.D.24	-2	" " " "		1521	
		13	01	2.D.32		" " " "		1521	
		13	01	2.D.33		" " " "		1521	
		13	01	2.D.20		" " " "		1521	
		13	01	2.D.34		" " " "		1521	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGEA-3.2-06-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE: A	
						BASIC FUNCTION 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.A.44	-1	Glass Processing Research Planner	1521
		13	01	2.A.43		" " " "	1521
		13	01	2.D.52		" " " "	1521
		13	01	2.B.06		" " " "	1521
		13	01	4.D.14		" " " "	1521
40	Evaluate experiment results	11	01	3.I.06	-2	Glass Processing Research Evaluator	1522
		11	01	2.C.26		Glass Processing Research Evaluator	1522
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.2-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
3.2 Glass Processes; Glass Processing					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-09-2
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:						MISSION MODE: A	
3.2 Glass Processes; Glass Processing				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-2	Furnace Disassembler	0986
		20	01	2.D.24	-2	Furnace Assembler	0987
		26	01	2.D.24	-2	Furnace Module Remover	0981
		27	01	2.D.24	-2	Furnace Module Installer	0982
		21	01	2.D.52		VHF Power Unit Disassembler	1100
		20	01	2.D.52		VHF Power Unit Assembler	1101
		26	01	2.D.52		VHF Power Unit Module Remover	1095
		27	01	2.D.52		VHF Power Unit Module Installer	1096
		21	01	2.D.34		Atmosphere Analysis Unit Disassembler	1212
		20	01	2.D.34		Atmosphere Analysis Unit Assembler	1213
		26	01	2.D.34		Atmosphere Analysis Unit Module Remover	1208
		27	01	2.D.34		Atmosphere Analysis Unit Module Installer	1209
		21	01	2.A.44		Viewing Device Disassembler	1224
		20	01	2.A.44		Viewing Device Assembler	1225
		26	01	2.A.44		Viewing Device Module Remover	1220
		27	01	2.A.44		Viewing Device Module Installer	1221
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-3.2-09-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
3.2 Glass Processes; Glass Processing					BASIC FUNCTION 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
34	(Continued)	21	01	2.A.43	-3	Holographic Device Disassembler 1231
		20	01	2.A.43		Holographic Device Assembler 1230
		26	01	2.A.43		Holographic Device Module Remover 1235
		27	01	2.A.43		Holographic Device Module Installer 1234
		21	01	2.D.24	-3	Furnace Disassembler 0986
		20	01	2.D.24	-3	Furnace Assembler 0987
		26	01	2.D.24	-3	Furnace Module Remover 0981
		27	01	2.D.24	-3	Furnace Module Installer 0982
		21	01	2.D.32		Heating/Positioning Coil Disassembler 1262
		20	01	2.D.32		Heating/Positioning Coil Assembler 1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover 1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer 1265
		21	01	2.D.33		Plasma Beam Unit Disassembler 1275
		20	01	2.D.33		Plasma Beam Unit Assembler 1274
		26	01	2.D.33		Plasma Beam Unit Module Remover 1279
		27	01	2.D.33		Plasma Beam Unit Module Installer 1278
		21	01	2.B.06	-1	Computer Disassembler 1056
		20	01	2.B.06	-1	Computer Assembler 1057
		26	01	2.B.06	-1	Computer Module Remover 0519
		27	01	2.B.06	-1	Computer Module Installer 0520
		21	01	4.D.14		Heat Rejection System Disassembler 1147
		20	01	4.D.14		Heat Rejection System Assembler 1148
		26	01	4.D.14		Heat Rejection System Module Remover 1143

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-3.2-09-4	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 3.2 Glass Processes; Glass Processing				MISSION MODE: A			
				BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	27	01	4.D.14	-1	Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.D.13		Environmental Chamber Disassembler	1063

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1

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DISCIPLINE: Materials Science & Mfg.

FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT:

MISSION MODE: A

3.2 Glass Processes; Glass Processing

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Module Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-1	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	Environmental Chamber Disassembler	1063
		20	01	2.D.13	-1	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		26	01	2.D.13	-1	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-1	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-3.2-10-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
3.2 Glass Processes; Glass Processing					BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
34	(Continued)	21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137		
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138		
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134		
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135		
		21	01	2.D.24	-2	Furnace Disassembler	0986		
		20	01	2.D.24	-2	Furnace Assembler	0987		
		26	01	2.D.24	-2	Furnace Module Remover	0981		
		27	01	2.D.24	-2	Furnace Module Installer	0982		
		21	01	2.D.52		VHF Power Unit Disassembler	1100		
		20	01	2.D.52		VHF Power Unit Assembler	1101		
		26	01	2.D.52		VHF Power Unit Module Remover	1095		
		27	01	2.D.52		VHF Power Unit Module Installer	1096		
		21	01	2.D.34		Atmosphere Analysis Unit Disassembler	1212		
		20	01	2.D.34		Atmosphere Analysis Unit Assembler	1213		
		26	01	2.D.34		Atmosphere Analysis Unit Module Remover	1208		
		27	01	2.D.34		Atmosphere Analysis Unit Module Installer	1209		
		21	01	2.A.44		Viewing Device Disassembler	1224		
		20	01	2.A.44		Viewing Device Assembler	1225		
		26	01	2.A.44		Viewing Device Module Remover	1220		
		27	01	2.A.44		Viewing Device Module Installer	1221		
		21	01	2.A.04	-3	TV Camera Disassembler	0900		
		20	01	2.A.04	-3	TV Camera Assembler	0901		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						PAGE	A-3.2-10-3
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE:	A
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.43	-3	Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.24	-3	Furnace Disassembler	0986
		20	01	2.D.24	-3	Furnace Assembler	0987
		26	01	2.D.24	-3	Furnace Module Remover	0981
		27	01	2.D.24	-3	Furnace Module Installer	0982
		21	01	2.D.32		Heating/Positioning Coil Disassembler	1262
		20	01	2.D.32		Heating/Positioning Coil Assembler	1261
		26	01	2.D.32		Heating/Positioning Coil Module Remover	1266
		27	01	2.D.32		Heating/Positioning Coil Module Installer	1265
		21	01	2.D.33		Plasma Beam Unit Disassembler	1275
		20	01	2.D.33		Plasma Beam Unit Assembler	1274
		26	01	2.D.33		Plasma Beam Unit Module Remover	1279
		27	01	2.D.33		Plasma Beam Unit Module Installer	1278
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-3.2-10-4
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE:	A
						BASIC FUNCTION:	10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
48	Repair experiment equipment	07	01	2.D.13	-1	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-1	Environmental Chamber Repairer	1065
		28	01	2.D.13	-3	" " "	1065
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133
		07	01	4.C.02		Atmosphere Supply/Control System Fault Identifier	1133

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-3.2-10-5
DISCIPLINE: Materials Science & Mfg.			EPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 3.2 Glass Processes; Glass Processing						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	28	01	2.D.15		Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24	-3	Furnace Fault Identifier	0989
		07	01	4.C.02		" " "	0989
		28	01	2.D.24	-3	Furnace Repairer	0988
		07	01	2.D.52		VHF Power Unit Fault Identifier	1103
		07	01	4.C.02		" " " " "	1103
		28	01	2.D.52		VHF Power Unit Repairer	1102
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540
		07	01	4.D.14		Heat Rejection System Fault Identifier	1150
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150
		28	01	4.D.14		Heat Rejection System Repairer	1149
		07	01	2.D.27		Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02		Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07		Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27		Materials Analysis Equipment Repairer	1052

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1		
						PAGEA-3.2-10-6		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A	
3.2 Glass Processes; Glass Processing						BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
48	(Continued)	07	01	2.D.24	-2	Furnace Fault Identifier	0989	
		07	01	4.C.02		" " "	0989	
		28	01	2.D.24	-2	Furnace Repairer	0988	
		07	01	2.D.32		Heating/Positioning Coil Fault Identifier	1264	
		07	01	4.C.02		Heating/Positioning Coil Fault Identifier	1264	
		28	01	2.D.32		Heating/Positioning Coil Repairer	1263	
		07	01	2.D.33		Plasma Beam Unit Fault Identifier	1277	
		07	01	4.C.02		" " " "	1277	
		28	01	2.D.33		Plasma Beam Unit Repairer	1276	
		07	01	2.D.34		Atmosphere Analysis Unit Fault Identifier	1210	
		07	01	4.C.02		Atmosphere Analysis Unit Fault Identifier	1210	
		28	01	2.D.34		Atmosphere Analysis Unit Repairer	1211	
		07	01	2.A.44		Viewing Device Fault Identifier	1222	
		07	01	4.C.02		" " " "	1222	
		28	01	2.A.44		Viewing Device Repairer	1223	
		07	01	2.A.04	-3	TV Camera Fault Identifier	0689	
		07	01	4.C.02		" " " "	0689	
		28	01	2.A.04	-3	TV Camera Repairer	0690	
		07	01	2.A.43		Holographic Device Fault Identifier	1233	
		07	01	4.C.02		Holographic Device Fault Identifier	1233	
		28	01	2.A.43		Holographic Device Repairer	1232	

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DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

4.0 Biological Processing

4.1 Electrophoretic Separation

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation			MISSION MODE: A				
					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Select mixture to be separated	13	01	2.C.04	-7	Electrophoretic Separation Research Planner	1586
		13	01	3.I.07	-1	Electrophoretic Separation Research Planner	1586
3	Select buffer pH	13	01	2.C.04	-6	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-7	Electrophoretic Separation Research Planner	1586
		13	01	3.I.07	-1	Electrophoretic Separation Research Planner	1586
4	Program power supply controller	15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.D.37	-1	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.D.37	-2	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.C.04	-6	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.C.04	-7	Power Conditioning/Distribution System Control Actuator	1179
		15	01	3.I.07	-1	Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-1	Power Conditioning/Distribution System Control Actuator	1179

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-04-2
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Connect ampoule to injection device	27	01	2.D.05	-2	Ampoule Installer	1598
		27	01	2.D.37	-2	" "	1598
29	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.07	-1	" "	0206
31	Set up experiment apparatus	18	01	2.C.04	-6	Buffer Solution Unstower	1552
		22	01	2.C.04	-6	Buffer Solution Translocator	1553
		27	01	2.C.04	-6	Buffer Solution Installer	1551
		27	01	3.I.07	-1	" " "	1551
		27	01	2.D.37	-1	" " "	1551
		27	01	2.D.37	-2	" " "	1551
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	2.C.04	-7	Biological Material Unstower	1557
		22	01	2.C.04	-7	Biological Material Translocator	1558
		27	01	2.C.04	-7	Biological Material Installer	1556
		27	01	2.D.37	-1	" " "	1556
		27	01	2.D.37	-2	" " "	1556
		27	01	2.D.05	-2	" " "	1556
		27	01	2.D.05	-1	" " "	1556
		27	01	3.I.07	-1	" " "	1556
		18	01	2.D.36		Biological Enclosure Unstower	1560
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.A.39	-1	Interferometer Unstower	1602
		22	01	2.A.39	-1	Interferometer Translocator	1603
		27	01	2.A.39	-1	Interferometer Installer	1601
		18	01	2.D.37	-1	Electrophoretic Column Unstower	1574
		18	01	2.D.37	-2	" " "	1574

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-4.1-04-3
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation						MISSION MODE:	A
						BASIC FUNCTION:	04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	22	01	2.D.37	-1	Electrophoretic Column Translocator	1575
		22	01	2.D.37	-2	Electrophoretic Column Translocator	1575
		27	01	2.D.37	-1	Electrophoretic Column Installer	1573
		27	01	2.D.37	-2	" " "	1573
		18	01	2.D.39		Buffer/Waste Separator Unstower	1541
		22	01	2.D.39		Buffer/Waste Separator Translocator	1542
		27	01	2.D.39		Buffer/Waste Separator Installer	1540
		27	01	2.D.37	-1	" " " "	1540
		27	01	2.D.37	-2	" " " "	1540
		18	01	2.D.40		Gas Elimination/Cooling System Unstower	1525
		22	01	2.D.40		Gas Elimination/Cooling System Translocator	1526
		27	01	2.D.40		Gas Elimination/Cooling System Installer	1524
		27	01	2.D.37	-1	Gas Elimination/Cooling System Installer	1524
		27	01	2.D.37	-2	Gas Elimination/Cooling System Installer	1524
		18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
		18	01	2.A.40	-2	Densitometer Unstower	1455
		22	01	2.A.40	-2	Densitometer Translocator	1456
		27	01	2.A.40	-2	Densitometer Installer	1457
		27	01	2.D.37	-1	" "	1457
		27	01	2.D.37	-2	" "	1457
		18	01	4.D.14		Heat Rejection System Unstower	1142

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1			
						PAGE A-4.1-04-4			
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:			MISSION MODE: A						
4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 04 Experiment Setup						
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE	NO.			
32	Reconfigure experiments	26	01	2.C.04	-6	Buffer Solution Remover	1554		
		27	01	2.C.04	-6	Buffer Solution Installer	1551		
		26	01	2.C.04	-7	Biological Material Remover	1559		
		27	01	2.C.04	-7	Biological Material Installer	1556		
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179		
		26	01	2.D.37	-1	Electrophoretic Column Remover	1576		
		26	01	2.D.37	-2	" " "	1576		
		27	01	2.D.37	-1	Electrophoretic Column Installer	1573		
		27	01	2.D.37	-2	" " "	1573		
		26	01	2.A.40	-2	Densitometer Remover	1458		
		27	01	2.A.40	-2	Densitometer Installer	1457		
		26	01	2.A.39	-1	Interferometer Remover	1604		
		27	01	2.A.39	-1	Interferometer Installer	1601		
		26	01	2.A.04	-3	TV Camera Remover	0661		
		27	01	2.A.04	-3	TV Camera Installer	0306		
		15	01	2.B.06	-1	Computer Control Actuator	0847		
		15	01	3.I.07	-1	" " "	0847		
		15	01	2.C.04	-7	" " "	0847		
		35	Calibrate instruments	08	01	2.A.40	-2	Densitometer Calibrator	1461
				08	01	4.C.01		" "	1461
08	01			2.A.39	-1	Interferometer Calibrator	1605		
08	01			4.C.01		" "	1605		
08	01			2.D.27		Materials Analysis Equipment Calibrator	1046		
08	01			4.C.01		Materials Analysis Equipment Calibrator	1046		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
46	Install data recording equipment	18	01	4.D.10		Data Recorder Unstower	1519
		22	01	4.D.10		Data Recorder Translocator	1520
		27	01	4.D.10		Data Recorder Installer	1156
50	Checkout optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		14	01	2.A.04	-3	TV Camera Tester	0633
		14	01	2.B.06	-2	" " "	0633
		01	01	2.B.06	-2	" " "	0633
		14	01	2.A.40	-2	Densitometer Tester	1618
		14	01	2.B.06	-2	" "	1618
		01	01	2.B.06	-2	" "	1618
		14	01	2.A.39	-1	Interferometer Tester	1606
		14	01	2.B.06	-2	" "	1606
		01	01	2.B.06	-2	" "	1606

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE:	A
4.1 Biological Processing; Electrophoretic Separation						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	Flush out apparatus	19	01	2.D.37	-1	Electrophoretic Column Cleaner	1577
		19	01	2.D.37	-2	" " "	1577
		19	01	4.D.06		" " "	1577
		19	01	2.D.39		Buffer/Waste Separator Cleaner	1543
		19	01	4.D.06		" " " "	1543
		19	01	2.D.40		Gas Elimination/Cooling System Cleaner	1527
		19	01	4.D.06		Gas Elimination/Cooling System Cleaner	1527
		18	01	4.D.06		Cleaning/Decontamination Equipment Unstower	1537
		18	01	2.D.25		Cleaning/Decontamination Equipment Unstower	1537
		18	01	1.A.03	-2	Cleaning/Decontamination Equipment Unstower	1537
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator	1538
		27	01	4.D.06		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-1	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-2	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.39		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.40		Cleaning/Decontamination Equipment Installer	1536
15	Secure apparatus	17	01	2.D.36		Biological Enclosure Stower	1562

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1		
						PAGE A-4.1-05-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:							MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation						BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE		NO.	
15	(Continued)	17	01	2.B.06	-2	Materials Science C/D Equipment Stower	1168	
		17	01	4.D.13		Power Conditioning/Distribution System Stower	1170	
		26	01	2.D.37	-1	Electrophoretic Column Remover	1576	
		26	01	2.D.37	-2	" " "	1576	
		22	01	2.D.37	-1	Electrophoretic Column Translocator	1575	
		22	01	2.D.37	-2	Electrophoretic Column Translocator	1575	
		17	01	2.D.37	-1	Electrophoretic Column Stower	1578	
		17	01	2.D.37	-2	" " "	1578	
		26	01	2.D.39		Buffer/Waste Separator Remover	1621	
		22	01	2.D.39		Buffer/Waste Separator Translocator	1542	
		17	01	2.D.39		Buffer/Waste Separator Stower	1544	
		26	01	2.D.40		Gas Elimination/Cooling System Remover	1622	
		22	01	2.D.40		Gas Elimination/Cooling System Translocator	1526	
		17	01	2.D.40		Gas Elimination/Cooling System Stower	1528	
		26	01	2.A.04	-3	TV Camera Remover	0661	
		22	01	2.A.04	-3	TV Camera Translocator	0026	
		17	01	2.A.04	-3	TV Camera Stower	0064	
		26	01	2.A.40	-2	Densitometer Remover	1458	
		22	01	2.A.40	-2	Densitometer Translocator	1456	
		17	01	2.A.40	-2	Densitometer Stower	1619	
		17	01	2.B.06	-1	Computer Stower	1160	
		26	01	2.A.39	-1	Interferometer Remover	1604	
		22	01	2.A.39	-1	Interferometer Translocator	1603	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-05-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE:	A
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	(Continued)	17	01	2.A.39	-1	Interferometer Stower	1607
		17	01	4.D.14		Heat Rejection System Stower	1145
		26	01	2.D.27		Materials Analysis Equipment Remover	1043
		22	01	2.D.27		Materials Analysis Equipment Translocator	1042
		17	01	2.D.27		Materials Analysis Equipment Stower	1047
		26	01	4.D.10		Data Recorder Remover	1599
		22	01	4.D.10		Data Recorder Translocator	1520
		17	01	4.D.10		Data Recorder Stower	1600
16	Dispose of toxic cleaning materials	22	01	4.D.06	-5	Cleaning/Decontamination Equipment Translocator	1538
		17	01	4.D.06		Cleaning/Decontamination Equipment Stower	1539
		17	01	1.A.03		Cleaning/Decontamination Equipment Stower	1539
17	Preserve samples by freeze-drying	22	01	2.C.04	-7	Biological Materials Translocator	1558
		27	01	2.C.04	-7	Biological Materials Installer	1556
		27	01	2.D.43		" " "	1556
		27	01	2.D.36		" " "	1556
		15	01	2.D.43		Lyophilization Apparatus Control Actuator	1589
		15	01	2.C.04	-7	Lyophilization Apparatus Control Actuator	1589
		15	01	3.J.01		Lyophilization Apparatus Control Actuator	1589

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-05-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
29	Conduct voice conferences with ground	05 05	01 01	4.A.02 3.I.07	-1	Radio Communicator " "	0206 0206
33	Refurbish experiment apparatus	18	01	4.D.06		Cleaning/Decontamination Equipment Unstower	1537
		18	01	2.D.25		Cleaning/Decontamination Equipment Unstower	1537
		18	01	1.A.03	-2	Cleaning/Decontamination Equipment Unstower	1537
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator	1538
		27	01	4.D.06		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-1	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-2	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.39		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.40		Cleaning/Decontamination Equipment Installer	1536
		19	01	2.D.37	-1	Electrophoretic Column Cleaner	1577
		19	01	2.D.37	-2	" " "	1577
		19	01	4.D.06		" " "	1577
		19	01	2.D.39		Buffer/Waste Separator Cleaner	1543
		19	01	4.D.06		" " " "	1543
		19	01	2.D.40		Gas Elimination/Cooling System Cleaner	1527
		19	01	4.D.06		Gas Elimination/Cooling System Cleaner	1527

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-05-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.D.36		Biological Enclosure Cleaner	1561
		19	01	4.D.06		" " "	1561
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-4.1-06-1		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
2	Introduce buffer solution into column with syringe	10	01	2.D.05	-3	Syringe Controller	1597		
		10	01	3.I.07	-1	" "	1597		
		10	01	2.C.04	-6	" "	1597		
		10	01	2.C.04	-7	" "	1597		
		10	01	2.D.37	-1	" "	1597		
4	Initiate bias voltage	15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179		
		15	01	2.B.06	-2	Power Conditioning/Distribution System Control Actuator	1179		
		15	01	2.D.37	-1	Power Conditioning/Distribution System Control Actuator	1179		
		15	01	2.D.37	-2	Power Conditioning/Distribution System Control Actuator	1179		
		15	01	2.B.06	-1	Power Conditioning/Distribution System Control Actuator	1179		
5	Withdraw mixture components from column	26	01	2.C.04	-7	Biological Materials Remover	1559		
		26	01	2.D.37	-1	" " "	1559		
		26	01	3.I.07	-1	" " "	1559		
6	Make up buffer solution from stock solutions	10	01	2.C.04	-6	Buffer Solution Mixer	1555		
		10	01	3.I.07	-1	" " "	1555		
		10	01	2.C.04	-7	" " "	1555		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-06-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Fill apparatus with buffer	27	01	2.C.04	-6	Buffer Solution Installer	1551
		27	01	2.D.37	-1	" " "	1551
		27	01	2.D.37	-2	" " "	1551
10	Verify buffer flow rate	13	01	2.C.04	-6	Buffer Solution Flow Rate Determiner	1623
		13	01	3.I.07	-1	Buffer Solution Flow Rate Determiner	1623
		13	01	2.B.06	-2	Buffer Solution Flow Rate Determiner	1623
		13	01	2.D.37	-2	Buffer Solution Flow Rate Determiner	1623
11	Initiate sample injection	15	01	2.B.06	-2	Materials Science C/D Equipment Control Actuator	1172
		15	01	2.D.37	-2	Materials Science C/D Equipment Control Actuator	1172
		15	01	2.C.04	-7	Materials Science C/D Equipment Control Actuator	1172
12	Continuously monitor stationary column run	01	01	2.D.37	-1	Electrophoretic Column Operation Monitor	1579
		01	01	2.B.06	-2	Electrophoretic Column Operation Monitor	1579

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Periodically monitor continuous column run	01	01	2.D.37	-2	Electrophoretic Column Operation Monitor	1579
		01	01	2.B.06	-2	Electrophoretic Column Operation Monitor	1579
18	Operate Schlieren optical scanner	15	01	2.B.06	-2	Interferometer Control Actuator	1616
		15	01	2.A.39	-2	" " "	1616
19	Operate U.V. Microdensitometer	15	01	2.B.06	-2	Densitometer Control Actuator	1617
		15	01	2.A.40	-2	" " "	1617
20	Evaluate Schlieren or micro-densitometer traces	11	01	2.D.37	-1	Electrophoretic Separation Process Evaluator	1587
		11	01	2.D.37	-2	Electrophoretic Separation Process Evaluator	1587
		11	01	2.B.06	-2	Electrophoretic Separation Process Evaluator	1587
		11	01	2.A.39	-2	Electrophoretic Separation Process Evaluator	1587
		11	01	2.A.40	-2	Electrophoretic Separation Process Evaluator	1587
		11	01	2.A.40	-2	Electrophoretic Separation Process Evaluator	1587
		11	01	3.I.07	-1	Electrophoretic Separation Process Evaluator	1587
		11	01	2.C.04	-7	Electrophoretic Separation Process Evaluator	1587

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-06-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
21	Determine infra-red absorption spectra of samples	02	01	2.A.03	-9	Biological Materials Test Observer	1624
		02	01	2.C.04	-7	" " " "	1624
		02	01	2.D.27		" " " "	1624
		02	01	3.I.07	-1	" " " "	1624
22	Titrate samples with biological reagents	10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	2.C.04	-7	Materials Analysis Equipment Controller	1049
		10	01	2.C.04	-8	Materials Analysis Equipment Controller	1049
		11	01	2.C.04	-7	Electrophoretic Separation Research Evaluator	1625
		11	01	3.I.07	-1	Electrophoretic Separation Research Evaluator	1625
23	Measure chemical reaction rates	10	01	2.C.04	-9	Biological Materials Mixing Controller	1626
		10	01	2.C.04	-7	Biological Materials Mixing Controller	1626
		10	01	2.D.27		Biological Materials Mixing Controller	1626
		02	01	2.C.04	-7	Biological Materials Test Observer	1624
		02	01	2.C.04	-9	Biological Materials Test Observer	1624
		02	01	2.D.27		Biological Materials Test Observer	1624

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-06-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	Measure product effectiveness on bacterial cultures	10	01	2.C.04	-4	Biological Materials Mixing Controller	1626
		10	01	2.C.04	-7	Biological Materials Mixing Controller	1626
		10	01	2.D.27		Biological Materials Mixing Controller	1626
		02	01	2.C.04	-4	Biological Materials Test Observer	1624
		02	01	2.C.04	-7	" " " "	1624
		02	01	2.D.27		" " " "	1624
		02	01	3.D.12		" " " "	1624
26	Photograph experiment configuration	15	01	2.A.17	-7	Camera Control Actuator	0245
		15	01	4.D.04	-3	" " "	0245
28	Voice record lab notes	05	01	3.I.07	-1	Electrophoretic Separation Data Recorder	1588
		05	01	4.D.10		Electrophoretic Separation Data Recorder	1588
29	Conduct voice conferences with ground	05	01	4.A.02		Radio Communicator	0206
		05	01	3.I.07	-1	" "	0206
36	Schedule experiment runs	13	01	2.B.06	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.B.06	-2	Electrophoretic Separation Research Planner	1586

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-06-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	(Continued)	13	01	3.I.07	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-7	Electrophoretic Separation Research Planner	1586
37	Define apparatus configuration	13	01	3.I.07	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-7	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-6	Electrophoretic Separation Research Planner	1586
		13	01	2.D.36		Electrophoretic Separation Research Planner	1586
		13	01	2.B.06	-2	Electrophoretic Separation Research Planner	1586
		13	01	4.D.13		Electrophoretic Separation Research Planner	1586
		13	01	2.D.37	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.D.37	-2	Electrophoretic Separation Research Planner	1586
		13	01	2.D.39		Electrophoretic Separation Research Planner	1586
		13	01	2.D.40		Electrophoretic Separation Research Planner	1586
		13	01	2.A.04	-3	Electrophoretic Separation Research Planner	1586
		13	01	2.A.40	-2	Electrophoretic Separation Research Planner	1586

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGEA-4.1-06-7
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:							MISSION MODE: A
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	13	01	2.A.39	-1	Electrophoretic Separation Research Planner	1586
		13	01	4.D.14		Electrophoretic Separation Research Planner	1586
		13	01	2.D.05	-2	Electrophoretic Separation Research Planner	1586
		13	01	2.D.43		Electrophoretic Separation Research Planner	1586
		13	01	2.D.05	-3	Electrophoretic Separation Research Planner	1586
		13	01	2.B.06	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.A.39	-2	Electrophoretic Separation Research Planner	1586
38	Define experiment conditions	13	01	3.I.07	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-7	Electrophoretic Separation Research Planner	1586
		13	01	2.C.04	-6	Electrophoretic Separation Research Planner	1586
		13	01	2.D.36		Electrophoretic Separation Research Planner	1586
		13	01	2.B.06	-2	Electrophoretic Separation Research Planner	1586
		13	01	4.D.13		Electrophoretic Separation Research Planner	1586
		13	01	2.D.37	-1	Electrophoretic Separation Research Planner	1586

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-06-8	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
38	(Continued)	13	01	2.D.37	-2	Electrophoretic Separation Research Planner	1586
		13	01	2.D.39		Electrophoretic Separation Research Planner	1586
		13	01	2.D.40		Electrophoretic Separation Research Planner	1586
		13	01	2.A.04	-3	Electrophoretic Separation Research Planner	1586
		13	01	2.A.40	-2	Electrophoretic Separation Research Planner	1586
		13	01	2.A.39	-1	Electrophoretic Separation Research Planner	1586
		13	01	4.D.14		Electrophoretic Separation Research Planner	1586
		13	01	2.D.05	-2	Electrophoretic Separation Research Planner	1586
		13	01	2.D.43		Electrophoretic Separation Research Planner	1586
		13	01	2.D.05	-3	Electrophoretic Separation Research Planner	1586
		13	01	2.B.06	-1	Electrophoretic Separation Research Planner	1586
		13	01	2.A.39	-2	Electrophoretic Separation Research Planner	1586
39	Monitor experiment performance	01	01	2.D.36		Biological Enclosure Operation Monitor	1563
		01	01	2.B.06	-2	Biological Enclosure Operation Monitor	1563

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-06-9
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.D.37	-1	Electrophoretic Column Operation Monitor	1579
		01	01	2.D.37	-2	Electrophoretic Column Operation Monitor	1579
		01	01	2.B.06	-2	Electrophoretic Column Operation Monitor	1579
		01	01	2.D.39		Buffer/Waste Separator Operation Monitor	1545
		01	01	2.B.06	-2	Buffer/Waste Separator Operation Monitor	1545
		01	01	2.D.40		Gas Elimination/Cooling System Operation Monitor	1529
		01	01	2.B.06	-2	Gas Elimination/Cooling System Operation Monitor	1529
		01	01	2.A.04	-3	TV Camera Operation Monitor	1345
		01	01	2.B.06	-2	" " " "	1345
		01	01	2.A.40	-2	Densitometer Operation Monitor	1462
		01	01	2.B.06	-2	" " " "	1462
		01	01	2.A.39	-1	Interferometer Operation Monitor	1609
		01	01	2.A.39	-2	" " " "	1609
		01	01	2.B.06	-2	" " " "	1609
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-1	Computer Operation Monitor	1055

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-06-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.D.43		Lyophilization Apparatus Operation Monitor	1509
		01	01	2.B.06	-2	Lyophilization Apparatus Operation Monitor	1590
40	Evaluate experiment results	11	01	3.I.07	-1	Electrophoretic Separation Research Evaluator	1625
		11	01	2.C.04	-7	Electrophoretic Separation Research Evaluator	1625
		11	01	2.D.37	-1	Electrophoretic Separation Research Evaluator	1625
		11	01	2.D.37	-2	Electrophoretic Separation Research Evaluator	1625
47	Operate measuring, recording, and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206
		10	01	2.A.40	-2	Densitometer Controller	1620
		10	01	2.A.39	-1	Interferometer Controller	1608
		10	01	2.A.39	-2	" "	1608

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1	
							PAGE	A-4.1-09-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL				
NO.	DESCRIPTION				TITLE			NO.	
33	Refurbish experiment apparatus	18	01	4.D.06		Cleaning/Decontamination Equipment	1537		
						Unstower			
			18	01	2.D.25		Cleaning/Decontamination Equipment	1537	
						Unstower			
			18	01	1.A.03	-2	Cleaning/Decontamination Equipment	1537	
						Unstower			
			22	01	4.D.06		Cleaning/Decontamination Equipment	1538	
						Translocator			
			27	01	4.D.06		Cleaning/Decontamination Equipment	1536	
						Installer			
			27	01	2.D.37	-1	Cleaning/Decontamination Equipment	1536	
						Installer			
			27	01	2.D.37	-2	Cleaning/Decontamination Equipment	1536	
						Installer			
			27	01	2.D.39		Cleaning/Decontamination Equipment	1536	
						Installer			
			27	01	2.D.40		Cleaning/Decontamination Equipment	1536	
						Installer			
			19	01	2.D.37	-1	Electrophoretic Column Cleaner	1577	
			19	01	2.D.37	-2	" " "	1577	
	19	01	4.D.06		" " "	1577			
	19	01	2.D.39		Buffer/Waste Separator Cleaner	1543			
	19	01	4.D.06		" " " "	1543			
	19	01	2.D.40		Gas Elimination/Cooling System	1527			
				Cleaner					
	19	01	4.D.06		Gas Elimination/Cooling System	1527			
				Cleaner					
	19	01	2.D.36		Biological Enclosure Cleaner	1561			
	19	01	4.D.06		" " "	1561			
	19	01	2.D.27		Materials Analysis Equipment	1048			
					Cleaner				

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
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DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation			MISSION MODE: A				
			BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
34	Maintain experiment equipment	21	01	2.D.36		Biological Enclosure Disassembler	1564
		20	01	2.D.36		Biological Enclosure Assembler	1565
		26	01	2.D.36		Biological Enclosure Module Remover	1566
		27	01	2.D.36		Biological Enclosure Module Installer	1567
		26	01	2.B.06	-2	Materials Sciences C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Sciences C/D Equipment Module Installer	1035
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.37	-1	Electrophoretic Column Disassembler	1580
		21	01	2.D.37	-2	Electrophoretic Column Disassembler	1580
		20	01	2.D.37	-1	Electrophoretic Column Assembler	1581
		20	01	2.D.37	-2	" " "	1581
		26	01	2.D.37	-1	Electrophoretic Column Module Remover	1582

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-09-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
34	(Continued)	26	01	2.D.37	-2	Electrophoretic Column Module Remover	1582
		27	01	2.D.37	-1	Electrophoretic Column Module Installer	1583
		27	01	2.D.37	-2	Electrophoretic Column Module Installer	1583
		21	01	2.D.39		Buffer/Waste Separator Disassembler	1546
		20	01	2.D.39		Buffer/Waste Separator Assembler	1547
		26	01	2.D.39		Buffer/Waste Separator Module Remover	1570
		27	01	2.D.39		Buffer/Waste Separator Module Installer	1571
		21	01	2.D.40		Gas Elimination/Cooling System Disassembler	1530
		20	01	2.D.40		Gas Elimination/Cooling System Assembler	1531
		26	01	2.D.40		Gas Elimination/Cooling System Module Remover	1532
		27	01	2.D.40		Gas Elimination/Cooling System Module Installer	1533
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.40	-2	Densitometer Disassembler	1463
		20	01	2.A.40	-2	Densitometer Assembler	1464
		26	01	2.A.40	-2	Densitometer Module Remover	1459
		27	01	2.A.40	-2	Densitometer Module Installer	1460
		21	01	2.A.39	-1	Interferometer Disassembler	1610

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-09-4	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 09 Scheduled Maintenance				MISSION MODE: A
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.A.39	-2	Interferometer Disassembler	1610
		20	01	2.A.39	-1	Interferometer Assembler	1611
		20	01	2.A.39	-2	" "	1611
		26	01	2.A.39	-1	Interferometer Module Remover	1612
		26	01	2.A.39	-2	" " "	1612
		27	01	2.A.39	-1	Interferometer Module Installer	1613
		27	01	2.A.39	-2	" " "	1613
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module	1143
						Remover	
		27	01	4.D.14		Heat Rejection System Module	1144
						Installer	
		21	01	2.D.43		Lyophilization Apparatus	1591
						Disassembler	
		20	01	2.D.43		Lyophilization Apparatus Assembler	1592
		26	01	2.D.43		Lyophilization Apparatus Module	1593
						Remover	
		27	01	2.D.43		Lyophilization Apparatus Module	1594
						Installer	
26	01	2.B.06	-1	Computer Module Remover	0519		
27	01	2.B.06	-1	Computer Module Installer	0520		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.1-10-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.1 Biological Processing; Electrophoretic Separation						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.D.36		Biological Enclosure Disassembler	1564
		20	01	2.D.36		Biological Enclosure Assembler	1565
		26	01	2.D.36		Biological Enclosure Module Remover	1566
		27	01	2.D.36		Biological Enclosure Module Installer	1567
		26	01	2.B.06	-2	Materials Sciences C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Sciences C/D Equipment Module Installer	1035
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.37	-1	Electrophoretic Column Disassembler	1580
		21	01	2.D.37	-2	Electrophoretic Column Disassembler	1580
		20	01	2.D.37	-1	Electrophoretic Column Assembler	1581
		20	01	2.D.37	-2	" " "	1581
		26	01	2.D.37	-1	Electrophoretic Column Module Remover	1582
		26	01	2.D.37	-2	Electrophoretic Column Module Remover	1582
		27	01	2.D.37	-1	Electrophoretic Column Module Installer	1583
		27	01	2.D.37	-2	Electrophoretic Column Module Installer	1583

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-10-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.D.39		Buffer/Waste Separator Disassembler	1546
		20	01	2.D.39		Buffer/Waste Separator Assembler	1547
		26	01	2.D.39		Buffer/Waste Separator Module Remover	1570
		27	01	2.D.39		Buffer/Waste Separator Module Installer	1571
		21	01	2.D.40		Gas Elimination/Cooling System Disassembler	1530
		20	01	2.D.40		Gas Elimination/Cooling System Assembler	1531
		26	01	2.D.40		Gas Elimination/Cooling System Module Remover	1532
		27	01	2.D.40		Gas Elimination/Cooling System Module Installer	1533
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.39	-1	Interferometer Disassembler	1610
		21	01	2.A.39	-2	" "	1610
		20	01	2.A.39	-1	Interferometer Assembler	1611
		20	01	2.A.39	-2	" "	1611
		26	01	2.A.39	-1	Interferometer Module Remover	1612
		26	01	2.A.39	-2	" " "	1612
		27	01	2.A.39	-1	Interferometer Module Installer	1613
		27	01	2.A.39	-2	" " "	1613
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.43		Lyophilization Apparatus Disassembler	1591
		20	01	2.D.43		Lyophilization Apparatus Assembler	1591
		26	01	2.D.43		Lyophilization Apparatus Module Remover	1593
		27	01	2.D.43		Lyophilization Apparatus Module Installer	1594
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
48	Repair experiment equipment	07	01	2.D.36		Biological Enclosure Fault Identifier	1568
		07	01	4.C.02		Biological Enclosure Fault Identifier	1568
		28	01	2.D.36		Biological Enclosure Repairer	1569
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.1-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE:	A
4.1 Biological Processing; Electrophoretic Separation						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	07	01	2.D.37	-1	Electrophoretic Column Fault Identifier	1584
		07	01	2.D.37	-2	Electrophoretic Column Fault Identifier	1584
		07	01	4.C.02		Electrophoretic Column Fault Identifier	1584
		28	01	2.D.37	-1	Electrophoretic Column Repairer	1585
		28	01	2.D.37	-2	" " "	1585
		07	01	2.D.39		Buffer/Waste Separator Fault Identifier	1548
		07	01	4.C.02		Buffer/Waste Separator Fault Identifier	1548
		28	01	2.D.39		Buffer/Waste Separator Repairer	1572
		07	01	2.D.40		Gas Elimination/Cooling System Fault Identifier	1534
		07	01	4.C.02		Gas Elimination/Cooling System Fault Identifier	1534
		28	01	2.D.40		Gas Elimination/Cooling System Repairer	1535
		07	01	2.A.04	-3	TV Camera Fault Identifier	0689
		07	01	4.C.02		" " " "	0689
		28	01	2.A.04	-3	TV Camera Repairer	0690
		07	01	2.A.40	-2	Densitometer Fault Identifier	1465
		07	01	4.C.02		" " "	1465
		28	01	2.A.40	-2	Densitometer Repairer	1466
		07	01	2.A.39	-1	Interferometer Fault Identifier	1614
		07	01	2.A.39	-2	" " "	1614
		07	01	4.C.02		" " "	1614
		28	01	2.A.39	-1	Interferometer Repairer	1615
		28	01	2.A.39	-2	" "	1615

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.1-10-5	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
4.1 Biological Processing; Electrophoretic Separation			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
48	(Continued)	07	01	4.D.14		Heat Rejection System Fault Identifier	1150
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150
		28	01	4.D.14		Heat Rejection System Repairer	1149
		07	01	2.D.43		Lyophilization Apparatus Fault Identifier	1595
		07	01	4.C.02		Lyophilization Apparatus Fault Identifier	1595
		28	01	2.D.43		Lyophilization Apparatus Repairer	1596
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540

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DISCIPLINE: Materials Science and Manufacturing

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

4.0 Biological Processing

4.2 Lyophilization

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.2-04-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.2 Biological Processing; Lyophilization					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Load sample vial into holder	18	01	2.D.43	-3	Lyophilization Apparatus Unstower	1627
		18	01	2.C.04	-7	" " "	1627
		22	01	2.D.43	-3	Lyophilization Apparatus Translocator	1628
		22	01	2.C.04	-7	Lyophilization Apparatus Translocator	1628
		27	01	2.D.43	-3	Lyophilization Module Installer	1594
		27	01	2.D.43	-2	" " "	1594
		27	01	2.C.04	-7	" " "	1594
2	Mount holder unit in airlock	22	01	2.D.43	-2	Lyophilization Apparatus Translocator	1628
		22	01	2.C.04	-7	Lyophilization Apparatus Translocator	1628
		27	01	2.D.43	-2	Lyophilization Apparatus Installer	1629
		27	01	2.C.04	-7	" " "	1629
		27	01	1.A.01	-17	" " "	1629
3	Set time and temperature automatic controls	15	01	2.B.02	-2	Lyophilization Apparatus Control Actuator	1589
		15	01	2.D.43		Lyophilization Apparatus Control Actuator	1589
		15	01	2.B.02	-1	Lyophilization Apparatus Control Actuator	1589
		15	01	3.J.01		Lyophilization Apparatus Control Actuator	1589

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.2-04-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
4.2 Biological Processing; Lyophilization			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	Set up experiment apparatus	27	01	2.B.06	-1	Computer Unstower	1054
		18	01	2.C.04	-7	Biological Materials Unstower	1557
		22	01	2.C.04	-7	Biological Materials Translocator	1558
		27	01	2.C.04	-7	Biological Materials Installer	1556
		27	01	2.D.43	-3	" " "	1556
		27	01	3.J.01		" " "	1556
		18	01	2.D.36		Biological Enclosure Unstower	1560
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	4.D.14		Heat Rejection System Unstower	1142
		18	01	2.D.43		Lyophilization Apparatus Unstower	1627
		22	01	2.D.43		Lyophilization Apparatus Translocator	1628
		27	01	2.D.43		Lyophilization Apparatus Installer	1629
		27	01	1.A.01	-17	" " "	1629
32	Reconfigure experiments	26	01	2.C.04	-7	Biological Materials Remover	1559
		26	01	2.D.43	-3	" " "	1559
		27	01	2.C.04	-7	Biological Materials Installer	1556
		27	01	2.D.43	-3	" " "	1556
		15	01	4.D.13		Power Conditioning/Distribution System Control Actuator	1179
		15	01	3.J.01		Power Conditioning/Distribution System Control Actuator	1179
		15	01	2.B.06	-1	Computer Control Actuator	0847
		15	01	2.B.06	-2	" " "	0847
		15	01	3.J.01		" " "	0847

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.2-04-3	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:				MISSION MODE: A			
4.2 Biological Processing; Lyophilization				BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	26	01	2.D.43		Lyophilization Apparatus Remover	1630
		26	01	1.A.01	-17	" " "	1630
		27	01	2.D.43		Lyophilization Apparatus Installer	1629
		27	01	1.A.01	-17	" " "	1629
35	Calibrate instruments	08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
50	Check out optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447
		01	01	2.B.06	-2	Materials Analysis Equipment Tester	1447

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.2-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
4.2 Biological Processing; Lyophilization						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Remove holder unit from airlock	26	01	2.D.43	-2	Lyophilization Apparatus Remover	1630
		26	01	2.C.04		" " "	1630
		26	01	1.A.01	-17	" " "	1630
5	Unload sample vials from holder	26	01	2.D.43	-3	Lyophilization Apparatus Module Remover	1593
		26	01	2.D.43	-2	Lyophilization Apparatus Module Remover	1593
		26	01	2.C.04	-7	Lyophilization Apparatus Module Remover	1593
41	Communicate experiment results to earth	05	01	3.J.01		Radio Communicator	0206
		05	01	4.A.02		" "	0206

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1
							PAGE	A-4.2-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT: 4.2 Biological Processing; Lyophilization							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
6	Make cultures of reconstituted microorganisms	10	01	2.C.04	-7	Biological Materials Culturing Controller	1633	
		10	01	2.C.04	-3	Biological Materials Culturing Controller	1633	
		10	01	2.D.36		Biological Materials Culturing Controller	1633	
		10	01	3.D.12		Biological Materials Culturing Controller	1633	
7	Make records of process conditions	05	01	3.J.01		Lyophilization Data Recorder	1631	
		05	01	4.D.10		" " "	1631	
8	Monitor heat-vacuum-cool cycle	01	01	2.B.06	-2	Lyophilization Apparatus Operation Monitor	1590	
		01	01	2.D.43		Lyophilization Apparatus Operation Monitor	1590	
9	Determine infrared absorption spectra of samples	02	01	2.A.03	-9	Biological Materials Test Observer	1624	
		02	01	2.C.04	-7	" " " "	1624	
		02	01	2.D.27		" " " "	1624	
		02	01	3.J.01		" " " "	1624	
10	Titrate samples with biological reagents	10	01	2.D.27		Materials Analysis Equipment Controller	1049	
		10	01	2.C.04	-7	Materials Analysis Equipment Controller	1049	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-4.2-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.2 Biological Processing; Lyophilization						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	(Continued)	10	01	2.C.04	-8	Materials Analysis Equipment Controller	1049
		11	01	2.C.04	-7	Lyophilization Research Evaluator	1625
		11	01	3.J.01		" " "	1625
11	Measure product effectiveness on bacterial cultures	10	01	2.C.04	-4	Biological Materials Mixing Controller	1626
		10	01	2.C.04	-7	Biological Materials Mixing Controller	1626
		10	01	2.D.27		Biological Materials Mixing Controller	1626
		02	01	2.C.04	-4	Biological Materials Test Observer	1624
		02	01	2.C.04	-7	" " " "	1624
		02	01	2.D.27		" " " "	1624
		02	01	3.D.12		" " " "	1624
12	Measure chemical reaction rates	10	01	2.C.04	-9	Biological Materials Mixing Controller	1626
		10	01	2.C.04	-7	Biological Materials Mixing Controller	1626
		10	01	2.D.27		Biological Materials Mixing Controller	1626
		02	01	2.C.04	-7	Biological Materials Test Observer	1624
		02	01	2.C.04	-9	Biological Materials Test Observer	1624
		02	01	2.D.27		Biological Materials Test Observer	1624

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-4.2-06-3		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:								MISSION MODE: A	
4.2 Biological Processing; Lyophilization					BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
36	Schedule experiment runs	13	01	2.B.06	-1	Lyophilization Research Planner	1632		
		13	01	2.B.06	-2	" " "	1632		
		13	01	3.J.01		" " "	1632		
		13	01	2.C.04	-7	" " "	1632		
37	Define apparatus configuration	13	01	3.J.01		Lyophilization Research Planner	1632		
		13	01	2.C.04	-7	" " "	1632		
		13	01	2.B.06	-2	" " "	1632		
		13	01	2.D.43		" " "	1632		
		13	01	2.D.36		" " "	1632		
		13	01	2.B.06	-1	" " "	1632		
		13	01	4.D.13		" " "	1632		
		13	01	4.D.14		" " "	1632		
		13	01	1.A.01	-17	" " "	1632		
38	Define experiment conditions	13	01	3.J.01		Lyophilization Research Planner	1632		
		13	01	2.C.04	-7	" " "	1632		
		13	01	2.B.06	-2	" " "	1632		
		13	01	2.D.43		" " "	1632		
		13	01	2.D.36		" " "	1632		
		13	01	2.B.06	-1	" " "	1632		
		13	01	4.D.13		" " "	1632		
		13	01	4.D.14		" " "	1632		
39	Monitor experiment performance	01	01	2.D.36		Biological Enclosure Operation Monitor	1563		
		01	01	2.B.06	-2	Biological Enclosure Operation Monitor	1563		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-4.2-06-4
EXPERIMENT: 4.2 Biological Processing; Lyophilization						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	(Continued)	01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	2.B.06	-1	Computer Operation Monitor	1055
		01	01	2.B.06	-2	" " "	1055
		01	01	2.D.43		Lyophilization Apparatus Operation Monitor	1590
		01	01	2.B.06	-2	Lyophilization Apparatus Operation Monitor	1590
40	Evaluate experiment results	11	01	3.J.01		Lyophilization Research Evaluator	2044
		11	01	2.C.04	-7	" " "	2044
		11	01	2.D.43		" " "	2044
47	Operate measuring, recording and transmission systems and equipment.	10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
		10	01	2.D.27		Materials Analysis Equipment Controller	1049
		10	01	4.A.02		Radio Communicator	0206

SERIES	MS-1
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DISCIPLINE: Materials Science & Mfg.

FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT:

MISSION MODE: A

4.2 Biological Processing; Lyophilization

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
33	Refurbish experiment apparatus	18	01	4.D.06		Cleaning/Decontamination Equipment Unstower	1537
		18	01	2.D.25		Cleaning/Decontamination Equipment Unstower	1537
		18	01	1.A.03	-2	Cleaning/Decontamination Equipment Unstower	1537
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator	1538
		27	01	4.D.06		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-1	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.37	-2	Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.39		Cleaning/Decontamination Equipment Installer	1536
		27	01	2.D.40		Cleaning/Decontamination Equipment Installer	1536
		19	01	2.D.36		Biological Enclosure Cleaner	1561
		19	01	4.D.06		" " "	1561
		19	01	2.D.27		Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner	1048
		34	Maintain experiment equipment	21	01	2.D.36	
20	01			2.D.36		Biological Enclosure Assembler	1565
26	01			2.D.36		Biological Enclosure Module Remover	1566

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-4.2-09-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.2 Biological Processing; Lyophilization						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.36		Biological Enclosure Module Installer	1567
		26	01	2.B.06	-2	Materials Sciences C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Sciences C/D Equipment Module Installer	1035
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.43		Lyophilization Apparatus Disassembler	1591
		20	01	2.D.43		Lyophilization Apparatus Assembler	1592
		26	01	2.D.43		Lyophilization Apparatus Module Remover	1593
		27	01	2.D.43		Lyophilization Apparatus Module Installer	1594
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-4.2-10-1		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
4.2 Biological Processing; Lyophilization							BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
34	Maintain experiment equipment	21	01	2.D.36		Biological Enclosure Disassembler	1564		
		20	01	2.D.36		Biological Enclosure Assembler	1565		
		26	01	2.D.36		Biological Enclosure Module Remover	1566		
		27	01	2.D.36		Biological Enclosure Module Installer	1567		
		26	01	2.B.06	-2	Materials Sciences C/D Equipment Module Remover	1034		
		27	01	2.B.06	-2	Materials Sciences C/D Equipment Module Installer	1035		
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137		
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138		
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134		
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135		
		21	01	4.D.14		Heat Rejection System Disassembler	1147		
		20	01	4.D.14		Heat Rejection System Assembler	1148		
		26	01	4.D.14		Heat Rejection System Module Remover	1143		
		27	01	4.D.14		Heat Rejection System Module Installer	1144		
		21	01	2.D.43		Lyophilization Apparatus Disassembler	1591		
		20	01	2.D.43		Lyophilization Apparatus Assembler	1592		
		26	01	2.D.43		Lyophilization Apparatus Module Remover	1593		
		27	01	2.D.43		Lyophilization Apparatus Module Installer	1593		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1		
							PAGE A-4.2-10-2		
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
4.2 Biological Processing; Lyophilization					BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
34	(Continued)	26	01	2.B.06	-1	Computer Module Remover	0519		
		27	01	2.B.06	-1	Computer Module Installer	0520		
48	Repair experiment equipment	07	01	2.D.36		Biological Enclosure Fault Identifier	1568		
		07	01	4.C.02		Biological Enclosure Fault Identifier	1568		
		28	01	2.D.36		Biological Enclosure Repairer	1569		
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039		
		07	01	4.C.02		Materials Science C/D Equipment Fault Identifier	1039		
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038		
		07	01	4.D.13		Power Conditioning/Distribution System Fault Identifier	1140		
		07	01	4.C.02		Power Conditioning/Distribution System Fault Identifier	1140		
		28	01	4.D.13		Power Conditioning/Distribution System Repairer	1139		
		07	01	4.D.14		Heat Rejection System Fault Identifier	1150		
		07	01	4.C.02		Heat Rejection System Fault Identifier	1150		
		28	01	4.D.14		Heat Rejection System Repairer	1149		
		07	01	2.D.43		Lyophilization Apparatus Fault Identifier	1595		
		07	01	4.C.02		Lyophilization Apparatus Fault Identifier	1595		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-4.2-10-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 4.2 Biological Processing; Lyophilization						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
48	(Continued)	28	01	2.D.43		Lyophilization Apparatus Repairer	1596
		07	01	2.B.06	-1	Computer Fault Identifier	0523
		07	01	4.C.02		" " "	0523
		28	01	2.B.06	-1	Computer Repairer	0540

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DISCIPLINE: Materials Science and Manufacturing.

FUNCTIONAL PROGRAM ELEMENT (FPE):

MS-1 Materials Science and Manufacturing In Space

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

5.0 Physical Properties of Fluids

5.1 Convection

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-04-1	
DISCIPLINE: Materials Science & Mfg.		FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:					MISSION MODE: A		
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
1	Set up control and measurement equipment	18	01	2.D.13	-2	Environmental Chamber Unstower	1058
		18	01	2.D.13	-3	" " "	1058
		18	01	2.D.13	-4	" " "	1058
		18	01	2.B.06	-1	Computer Unstower	1054
		18	01	2.B.06	-2	Materials Science C/D Equipment Unstower	1161
		18	01	2.D.15		Atmosphere Supply/Control System Unstower	1162
		18	01	4.D.13		Power Conditioning/Distribution System Unstower	1163
		18	01	2.D.51		Zone Refiner Unstower	1426
		22	01	2.D.51		Zone Refiner Translocator	1427
		27	01	2.D.51		Zone Refiner Installer	1428
		18	01	2.A.43		Holographic Device Unstower	1240
		22	01	2.A.43		Holographic Device Translocator	1239
		27	01	2.A.43		Holographic Device Installer	1238
		18	01	2.D.21	-1	Mixing Unit Unstower	0992
		18	01	2.D.21	-2	" " "	0992
		18	01	2.D.21	-3	" " "	0992
		22	01	2.D.21	-1	Mixing Unit Translocator	0993
		22	01	2.D.21	-2	" " "	0993
		22	01	2.D.21	-3	" " "	0993
		27	01	2.D.21	-1	Mixing Unit Installer	0991
		27	01	2.D.21	-2	" " "	0991
		27	01	2.D.21	-3	" " "	0991
		18	01	2.D.56	-3	Heating/Cooling Device Unstower	1253
		22	01	2.D.56		Heating/Cooling Device Translocator	1252
		27	01	2.D.56		Heating/Cooling Device Installer	1251
		27	01	2.A.18		" " " "	1251

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1	
							PAGE	A-5.1-04-2	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space						
EXPERIMENT:							MISSION MODE: A		
5.1 Physical Properties of Fluids; Convection						BASIC FUNCTION: 04 Experiment Setup			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
1	(Continued)	18	01	4.D.14		Heat Rejection System Unstower	1142		
		18	01	2.D.18		Dispersion Control System Unstower	1105		
		18	01	2.D.50		Slip Cast Injection System Unstower	1116		
		22	01	2.D.50		Slip Cast Injection System Translocator	1117		
		27	01	2.D.50		Slip Cast Injection System Installer	1115		
		18	01	2.D.22		Vibrator Unstower	1080		
		22	01	2.D.22		Vibrator Translocator	1081		
		27	01	2.D.22		Vibrator Installer	1079		
		18	01	2.A.40	-1	Densitometer Unstower	1455		
		22	01	2.A.40	-1	Densitometer Translocator	1456		
		27	01	2.A.40	-1	Densitometer Installer	1457		
		18	01	2.A.36	-2	Isotope Tracer-Counter Unstower	1634		
		22	01	2.A.36	-2	Isotope Tracer-Counter Translocator	1635		
		27	01	2.A.36	-2	Isotope Tracer-Counter Installer	1636		
3	Program automatic control equipment	13	01	2.B.06	-1	Computer Program Determiner	0609		
		13	01	3.I.08		" " "	0609		
		13	01	2.C.27		" " "	0609		
		15	01	2.B.06	-1	Computer Control Actuator	0847		
4	Prepare fluid samples	13	01	2.C.27		Fluid Convection Research Planner	1648		
		13	01	3.I.08		" " " "	1648		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1			
							PAGE A-5.1-04-3			
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							
EXPERIMENT:							MISSION MODE: A			
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 04 Experiment Setup					
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL					
NO.	DESCRIPTION				TITLE			NO.		
4	(Continued)	10	01	2.C.27		Fluid Sample Mixing Controller			1647	
		10	01	3.I.08		"	"	"	"	1647
		10	01	2.D.21	-1	"	"	"	"	1647
		10	01	2.D.21	-2	"	"	"	"	1647
		10	01	2.D.21	-3	"	"	"	"	1647
31	Set up experiment apparatus	18	01	2.D.50		Slip Cast Injection System			1116	
						Unstower				
		22	01	2.D.50		Slip Cast Injection System			1117	
						Translocator				
		27	01	2.D.50		Slip Cast Injection System			1115	
						Installer				
		18	01	2.D.22		Vibrator Unstower			1080	
		22	01	2.D.22		Vibrator Translocator			1081	
		27	01	2.D.22		Vibrator Installer			1079	
		18	01	2.C.27		Fluid Samples Unstower			1652	
		22	01	2.C.27		Fluid Samples Translocator			1651	
		27	01	2.C.27		Fluid Samples Installer			1650	
		18	01	2.D.13	-2	Environmental Chamber Unstower			1058	
		18	01	2.D.13	-3	"	"	"	1058	
		18	01	2.D.13	-4	"	"	"	1058	
		18	01	2.B.06	-1	Computer Unstower			1054	
		18	01	2.B.06	-2	Materials Science C/D Equipment			1161	
				Unstower						
18	01	2.D.15		Atmosphere Supply/Control System			1162			
				Unstower						
18	01	4.D.13		Power Conditioning/Distribution			1163			
				System Unstower						
18	01	2.D.24	-1	Furnace Unstower			0980			

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-04-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
31	(Continued)	18	01	2.D.51	Zone Refiner Unstower	1426
		22	01	2.D.51	Zone Refiner Translocator	1427
		27	01	2.D.51	Zone Refiner Installer	1428
		18	01	2.D.18	Dispersion Control System Unstower	1105
		18	01	2.A.17	Camera Unstower	0292
		22	01	2.A.17	Camera Translocator	1226
		27	01	2.A.17	Camera Installer	0039
		18	01	2.A.04	TV Camera Unstower	0054
		22	01	2.A.04	TV Camera Translocator	0026
		27	01	2.A.04	TV Camera Installer	0306
		18	01	2.A.43	Holographic Device Unstower	1240
		22	01	2.A.43	Holographic Device Translocator	1239
		27	01	2.A.43	Holographic Device Installer	1238
		18	01	2.D.21	Mixing Unit Unstower	0992
		18	01	2.D.21	" " "	0992
		18	01	2.D.21	" " "	0992
		22	01	2.D.21	Mixing Unit Translocator	0993
		22	01	2.D.21	" " "	0993
		22	01	2.D.21	" " "	0993
		27	01	2.D.21	Mixing Unit Installer	0991
		27	01	2.D.21	" " "	0991
		27	01	2.D.21	" " "	0991
		18	01	2.D.56	Heating/Cooling Device Unstower	1253
		22	01	2.D.56	Heating/Cooling Device Translocator	1252
		27	01	2.D.56	Heating/Cooling Device Installer	1251
		27	01	2.A.18	" " " "	1251
		18	01	4.D.14	Heat Rejection System Unstower	1142
		18	01	2.D.19	Materials Forming Equipment Unstower	1017

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-04-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	(Continued)	22	01	2.D.19		Materials Forming Equipment Translocator	1018
		27	01	2.D.19		Materials Forming Equipment Installer	1016
		18	01	2.A.40	-1	Densitometer Unstower	1455
		22	01	2.A.40	-1	Densitometer Translocator	1456
		27	01	2.A.40	-1	Densitometer Installer	1457
		18	01	2.A.36	-2	Isotope Tracer-Counter Unstower	1634
		22	01	2.A.36	-2	Isotope Tracer-Counter Translocator	1635
		27	01	2.A.36	-2	Isotope Tracer-Counter Installer	1636
32	Reconfigure experiments	26	01	2.A.40	-1	Densitometer Remover	1458
		27	01	2.A.40	-1	Densitometer Installer	1457
		26	01	2.A.40	-1	Densitometer Module Remover	1459
		27	01	2.A.40	-1	Densitometer Module Installer	1460
		26	01	2.A.36	-2	Isotope Tracer-Counter Remover	1637
		27	01	2.A.36	-2	Isotope Tracer-Counter Installer	1636
		26	01	2.A.36	-2	Isotope Tracer-Counter Module Remover	1638
		27	01	2.A.36	-2	Isotope Tracer-Counter Module Installer	1639
		26	01	2.D.50		Slip Cast Injection System Remover	1118
		27	01	2.D.50		Slip Cast Injection System Installer	1115
		26	01	2.D.50		Slip Cast Injection System Module Remover	1119
		27	01	2.D.50		Slip Cast Injection System Module Installer	1120

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-04-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:					MISSION MODE: A	
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
32	(Continued)	26	01	2.D.22	Vibrator Remover	1082
		27	01	2.D.22	Vibrator Installer	1079
		26	01	2.D.22	Vibrator Module Remover	1083
		27	01	2.D.22	Vibrator Module Installer	1084
		26	01	2.D.51	Zone Refiner Remover	1429
		27	01	2.D.51	Zone Refiner Installer	1428
		26	01	2.D.51	Zone Refiner Module Remover	1430
		27	01	2.D.51	Zone Refiner Module Installer	1431
		15	01	2.B.06	-1 Computer Control Actuator	0847
		15	01	3.I.08	" " "	0847
		15	01	2.C.27	" " "	0847
		26	01	2.D.13	-2 Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3 Environmental Chamber Module Remover	1059
		26	01	2.D.13	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2 Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3 Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4 Environmental Chamber Module Installer	1060
		26	01	2.C.27	Fluid Sample Remover	1653
		27	01	2.C.27	Fluid Sample Installer	1650
		16	01	2.B.06	-2 Materials Science C/D Equipment Control Deactuator	1330
		15	01	2.B.06	-2 Materials Science C/D Equipment Control Actuator	1172
		26	01	2.B.06	-2 Materials Science C/D Equipment Module Remover	1034

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
32	(Continued)	27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		26	01	2.D.18		Dispersion Control System Module Remover	1106
		27	01	2.D.18		Dispersion Control System Module Installer	1108
		26	01	2.A.43		Holographic Device Remover	1237
		27	01	2.A.43		Holographic Device Installer	1238
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		26	01	2.A.17	-7	Camera Remover	0314
		27	01	2.A.17	-7	Camera Installer	0039
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		26	01	2.A.04	-3	TV Camera Remover	0661

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-04-8
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	27	01	2.A.04	-3	TV Camera Installer	0306
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		26	01	2.D.21	-1	Mixing Unit Remover	0994
		26	01	2.D.21	-2	" " "	0994
		26	01	2.D.21	-3	" " "	0994
		27	01	2.D.21	-1	Mixing Unit Installer	0991
		27	01	2.D.21	-2	" " "	0991
		27	01	2.D.21	-3	" " "	0991
		26	01	2.D.21	-1	Mixing Unit Module Remover	0995
		26	01	2.D.21	-2	" " " "	0995
		26	01	2.D.21	-3	" " " "	0995
		27	01	2.D.21	-1	Mixing Unit Module Installer	0996
		27	01	2.D.21	-2	" " " "	0996
		27	01	2.D.21	-3	" " " "	0996
		26	01	2.D.56		Heating/Cooling Device Remover	1250
		27	01	2.D.56		Heating/Cooling Device Installer	1251
		26	01	2.D.56		Heating/Cooling Device Module Remover	1248
		27	01	2.D.56		Heating/Cooling Device Module Installer	1247
35	Calibrate instruments	08	01	2.A.43		Holographic Device Calibrator	1227
		08	01	4.C.01		" "	1227
		08	01	2.D.27		Materials Analysis Equipment Calibrator	1046
		08	01	4.C.01		Materials Analysis Equipment Calibrator	1046
		08	01	2.A.40	-1	Densitometer Calibrator	1461

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space							PAGE A-5.1-04-9
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection							MISSION MODE: A
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
35	(Continued)	08	01	4.C.01	-2	Densitometer Calibrator	1461
		08	01	2.A.36		Isotope Tracer-Counter Calibrator	1640
		08	01	4.C.01		" " " "	1640
42	Install movie cameras	18	01	2.A.17	-7	Camera Unstower	0292
		22	01	2.A.17	-7	Camera Translocator	1226
		27	01	2.A.17	-7	Camera Installer	0039
43	Install TV cameras	18	01	2.A.04	-3	TV Camera Unstower	0054
		22	01	2.A.04	-3	TV Camera Translocator	0026
		27	01	2.A.04	-3	TV Camera Installer	0306
46	Install data recording equipment	27	01	4.D.10		Data Recorder Installer	1156
49	Install optical instrumentation and recording devices	27	01	2.A.40	-1	Densitometer Installer	1457
		27	01	2.D.27		Materials Analysis Equipment Installer	1040
		27	01	2.A.17	-7	Camera Installer	0039
		27	01	2.A.04	-3	TV Camera Installer	0306
		27	01	4.D.04	-3	Camera Installer	0039
50	Checkout optical instrumentation and measuring devices	14	01	2.D.27		Materials Analysis Equipment Tester	1447
		14	01	2.B.06	-2	Materials Analysis Equipment Tester	1447

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-04-10
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
					BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
50	(Continued)	01	01	2.B.06	-2	Materials Analysis Equipment Tester 1447
		14	01	2.A.17	-7	Camera Tester 1448
		14	01	2.B.06	-2	" " 1448
		01	01	2.B.06	-2	" " 1448
		14	01	2.A.04	-3	TV Camera Tester 0633
		14	01	2.B.06	-2	" " " 0633
		01	01	2.B.06	-2	" " " 0633
		14	01	4.D.04	-3	Camera Tester 1448
		14	01	2.B.06	-2	" " 1448
		01	01	2.B.06	-2	" " 1448
		14	01	2.A.40	-1	Densitometer Tester 1618
		14	01	2.B.06	-2	" " 1618
		01	01	2.B.06	-2	" " 1618

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-05-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
					BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
33	Refurbish experiment apparatus	18	01	4.D.06	Cleaning/Decontamination Equipment Unstower	1537
		18	01	2.D.25	Cleaning/Decontamination Equipment Unstower	1537
		18	01	1.A.03	-2 Cleaning/Decontamination Equipment Unstower	1537
		22	01	4.D.06	Cleaning/Decontamination Equipment Translocator	1538
		27	01	4.D.06	Cleaning/Decontamination Equipment Installer	1536
		19	01	2.D.13	-2 Environmental Chamber Cleaner	1062
		19	01	2.D.13	-3 " " "	1062
		19	01	2.D.13	-4 " " "	1062
		19	01	4.D.06	" " "	1062
		19	01	2.D.24	-1 Furnace Cleaner	0984
		19	01	4.D.06	" " "	0984
		19	01	2.D.18	Dispersion Control System Cleaner	1109
		19	01	4.D.06	" " " "	1109
		19	01	2.D.27	Materials Analysis Equipment Cleaner	1048
		19	01	4.D.06	Materials Analysis Equipment Cleaner	1048
		19	01	2.D.21	-1 Mixing Unit Cleaner	0998
		19	01	2.D.21	-2 " " "	0998
		19	01	2.D.21	-3 " " "	0998
		19	01	4.D.06	" " "	0998
		19	01	2.D.50	Slip Cast Injection System Cleaner	1361
		19	01	4.D.06	Slip Cast Injection System Cleaner	1361

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-05-2	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.D.51		Zone Refiner Cleaner	1432
		19	01	4.D.06		" " "	1432
		19	01	2.D.19		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
41	Communicate experiment results to earth	05	01	3.I.08		Radio Communicator	0206
		05	01	4.A.02		" "	0206
44	Develop film; make prints	06	01	2.A.27		Film Developer	0328
		06	01	4.B.08		" "	0328
		06	01	2.A.27		Photograph Printer Controller	1159
		06	01	4.B.08		" " "	1159

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-5.1-06-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Monitor experiment conduct	01	01	2.B.06	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-2	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-3	Environmental Chamber Operation Monitor	1141
		01	01	2.D.13	-4	Environmental Chamber Operation Monitor	1141
		01	01	2.B.06	-2	Dispersion Control System Operation Monitor	1110
		01	01	2.D.18		Dispersion Control System Operation Monitor	1110
		01	01	2.B.06	-2	Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.D.15		Atmosphere Supply/Control System Operation Monitor	1129
		01	01	2.B.06	-2	Power Conditioning/Distribution System Operation Monitor	1136
		01	01	4.D.13		Power Conditioning/Distribution System Operation Monitor	1136
		01	01	2.B.06	-2	Furnace Operation Monitor	0985
		01	01	2.D.24	-1	" " "	0985
		01	01	2.D.56		Heating/Cooling Device Operation Monitor	1241
		01	01	2.B.06	-2	Computer Operation Monitor	1055
		01	01	2.B.06	-1	" " "	1055
		01	01	2.B.06	-2	Heat Rejection System Operation Monitor	1146
		01	01	4.D.14		Heat Rejection System Operation Monitor	1146

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-06-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
2	(Continued)	01	01	2.B.06	-2	Camera Operation Monitor 1344
		01	01	2.A.17	-7	" " " 1344
		01	01	2.B.06	-2	TV Camera Operation Monitor 1345
		01	01	2.A.04	-3	" " " " 1345
		01	01	2.B.06	-2	Holographic Device Operation Monitor 1228
		01	01	2.A.43		Holographic Device Operation Monitor 1228
		01	01	2.B.06	-2	Mixing Unit Operation Monitor 0999
		01	01	2.D.21	-1	" " " " 0999
		01	01	2.D.21	-2	" " " " 0999
		01	01	2.D.21	-3	" " " " 0999
		01	01	2.B.06	-2	Heating/Cooling Device Operation Monitor 1241
		01	01	2.B.06	-2	Slip Cast Injection System Operation Monitor 1122
		01	01	2.D.50		Slip Cast Injection System Operation Monitor 1122
		01	01	2.B.06	-2	Vibrator Operation Monitor 1086
		01	01	2.D.22		" " " " 1086
		01	01	2.B.06	-2	Densitometer Operation Monitor 1462
		01	01	2.A.40	-1	" " " " 1462
		01	01	2.B.06	-2	Zone Refiner Operation Monitor 1433
		01	01	2.D.51		" " " " 1433
		01	01	2.B.06	-2	Isotope Tracer-Counter Operation Monitor 1641
		01	01	2.A.36	-2	Isotope Tracer-Counter Operation Monitor 1641

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-06-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:			MISSION MODE: A				
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
36	Schedule experiment runs	13	01	2.B.06	-1	Fluid Convection Research Planner	1648
		13	01	2.B.06	-2	" " " "	1648
		13	01	3.I.08		" " " "	1648
		13	01	2.C.27		" " " "	1648
37	Define apparatus configuration	13	01	3.I.08		Fluid Convection Research Planner	1648
		13	01	2.C.27		" " " "	1648
		13	01	2.D.13	-2	" " " "	1648
		13	01	2.D.13	-3	" " " "	1648
		13	01	2.D.13	-4	" " " "	1648
		13	01	2.B.06	-2	" " " "	1648
		13	01	2.D.15		" " " "	1648
		13	01	4.D.13		" " " "	1648
		13	01	2.D.24	-1	" " " "	1648
		13	01	2.D.18		" " " "	1648
		13	01	2.D.19		" " " "	1648
		13	01	2.A.17	-7	" " " "	1648
		13	01	2.A.04	-3	" " " "	1648
		13	01	2.A.43		" " " "	1648
		13	01	2.D.21	-1	" " " "	1648
		13	01	2.D.21	-2	" " " "	1648
		13	01	2.D.21	-3	" " " "	1648
		13	01	2.D.50		" " " "	1648
		13	01	2.D.22		" " " "	1648
		13	01	2.D.56		" " " "	1648
		13	01	2.A.40	-1	" " " "	1648
		13	01	2.D.51		" " " "	1648
		13	01	2.A.36	-2	" " " "	1648
		13	01	2.B.06	-1	" " " "	1648
		13	01	4.D.14		" " " "	1648

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-06-4
DISCIPLINE: Materials Science & Mfg.			EPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:						MISSION MODE: A	
5.1 Physical Properties of Fluids; Convection						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
38	Define experiment conditions	13	01	3.I.08		Fluid Convection Research Planner	1648
		13	01	2.C.27		" " " "	1648
		13	01	2.D.13	-2	" " " "	1648
		13	01	2.D.13	-3	" " " "	1648
		13	01	2.D.13	-4	" " " "	1648
		13	01	2.B.06	-2	" " " "	1648
		13	01	2.D.15		" " " "	1648
		13	01	4.D.13		" " " "	1648
		13	01	2.D.24	-1	" " " "	1648
		13	01	2.D.18		" " " "	1648
		13	01	2.D.19		" " " "	1648
		13	01	2.A.17	-7	" " " "	1648
		13	01	2.A.04	-3	" " " "	1648
		13	01	2.A.43		" " " "	1648
		13	01	2.D.21	-1	" " " "	1648
		13	01	2.D.21	-2	" " " "	1648
		13	01	2.D.21	-3	" " " "	1648
		13	01	2.D.50		" " " "	1648
		13	01	2.D.22		" " " "	1648
		13	01	2.D.56		" " " "	1648
		13	01	2.A.40	-1	" " " "	1648
		13	01	2.D.51		" " " "	1648
		13	01	2.A.36	-2	" " " "	1648
		13	01	2.B.06	-1	" " " "	1648
		13	01	4.D.14		" " " "	1648
40	Evaluate experiment results	11	01	3.I.08		Fluid Convection Research	1649
		11	01	2.C.27		Evaluator Fluid Convection Research Evaluator	1649

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-06-5	
DISCIPLINE: Materials Science & Mfg.				FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:				MISSION MODE: A			
5.1 Physical Properties of Fluids; Convection				BASIC FUNCTION: 06 Experiment Conduct			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
47	Operate measuring, recording and transmission systems and equipment	10	01	2.A.04	-3	TV Camera Controller	0334
		10	01	4.A.01		Telemetry Equipment Controller	1104
		10	01	4.D.10		Data Recorder Controller	1157
						Controller	
		10	01	4.A.02		Radio Communicator	0206
		10	01	2.A.40	-1	Densitometer Controller	1620
		10	01	2.A.36	-2	Isotope Tracer-Counter Controller	1642

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-09-1
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
33	Refurbish experiment apparatus	18	01	4.D.06		Cleaning/Decontamination Equipment Unstower 1537
		18	01	2.D.25		Cleaning/Decontamination Equipment Unstower 1537
		18	01	1.A.03	-2	Cleaning/Decontamination Equipment Unstower 1537
		22	01	4.D.06		Cleaning/Decontamination Equipment Translocator 1538
		27	01	4.D.06		Cleaning/Decontamination Equipment Installer 1536
		19	01	2.D.13	-2	Environmental Chamber Cleaner 1062
		19	01	2.D.13	-3	" " " 1062
		19	01	2.D.13	-4	" " " 1062
		19	01	4.D.06		" " " 1062
		19	01	2.D.24	-1	Furnace Cleaner 0984
		19	01	4.D.06		" " 0984
		19	01	2.D.18		Dispersion Control System Cleaner 1109
		19	01	4.D.06		" " " " 1109
		19	01	2.D.27		Materials Analysis Equipment Cleaner 1048
		19	01	4.D.06		Materials Analysis Equipment Cleaner 1048
		19	01	2.D.21	-1	Mixing Unit Cleaner 0998
		19	01	2.D.21	-2	" " " 0998
		19	01	2.D.21	-3	" " " 0998
		19	01	4.D.06		" " " 0998
		19	01	2.D.50		Slip Cast Injection System Cleaner 1361
		19	01	4.D.06		" " " " " 1361
		19	01	2.D.51		Zone Refiner Cleaner 1432
		19	01	4.D.06		" " " 1432

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
DISCIPLINE: Materials Science & Mfg.						PAGE	A-5.1-09-2
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE:	A
						BASIC FUNCTION:	09 Scheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
33	(Continued)	19	01	2.D.19		Materials Forming Equipment Cleaner	1021
		19	01	4.D.06		Materials Forming Equipment Cleaner	1021
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		21	01	2.D.13	-4	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		20	01	2.D.13	-4	" " "	1064
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-09-3	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131
		26	01	2.D.15		Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15		Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13		Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13		Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13		Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13		Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24	-1	Furnace Disassembler	0986
		20	01	2.D.24	-1	Furnace Assembler	0987
		26	01	2.D.24	-1	Furnace Module Remover	0981
		27	01	2.D.24	-1	Furnace Module Installer	0982
		21	01	2.D.18		Dispersion Control System Disassembler	1111
		20	01	2.D.18		Dispersion Control System Assembler	1112
		26	01	2.D.18		Dispersion Control System Module Remover	1106
		27	01	2.D.18		Dispersion Control System Module Installer	1108

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-09-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:			MISSION MODE: A			
5.1 Physical Properties of Fluids; Convection			BASIC FUNCTION: 09 Scheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
34	(Continued)	21	01	2.D.21	-1	Mixing Unit Disassembler 1000
		21	01	2.D.21	-2	" " " 1000
		21	01	2.D.21	-3	" " " 1000
		20	01	2.D.21	-1	Mixing Unit Assembler 1001
		20	01	2.D.21	-2	" " " 1001
		20	01	2.D.21	-3	" " " 1001
		26	01	2.D.21	-1	Mixing Unit Module Remover 0995
		26	01	2.D.21	-2	" " " " 0995
		26	01	2.D.21	-3	" " " " 0995
		27	01	2.D.21	-1	Mixing Unit Module Installer 0996
		27	01	2.D.21	-2	" " " " 0996
		27	01	2.D.21	-3	" " " " 0996
		21	01	2.B.06	-1	Computer Disassembler 1056
		20	01	2.B.06	-1	Computer Assembler 1057
		26	01	2.B.06	-1	Computer Module Remover 0519
		27	01	2.B.06	-1	Computer Module Installer 0520
		21	01	4.D.14		Heat Rejection System 1147
						Disassembler
		20	01	4.D.14		Heat Rejection System Assembler 1148
		26	01	4.D.14		Heat Rejection System Module 1143
						Remover
		27	01	4.D.14		Heat Rejection System Module 1144
						Installer
		21	01	2.D.27		Materials Analysis Equipment 1050
						Disassembler
		20	01	2.D.27		Materials Analysis Equipment 1051
						Assembler
		26	01	2.D.27		Materials Analysis Equipment 1044
						Module Remover
		27	01	2.D.27		Materials Analysis Equipment 1045
						Module Installer

FLIGHT EXPERIMENT TASK-SKILLS

SERIES MS-1
PAGE A-5.1-09-5

DISCIPLINE: Materials Science & Mfg. FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space

EXPERIMENT: MISSION MODE: A

5.1 Physical Properties of Fluids; Convection

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.A.04	-3	TV Camera Disassembler	0900
		20	01	2.A.04	-3	TV Camera Assembler	0901
		26	01	2.A.04	-3	TV Camera Module Remover	0111
		27	01	2.A.04	-3	TV Camera Module Installer	0112
		21	01	2.A.43		Holographic Device Disassembler	1231
		20	01	2.A.43		Holographic Device Assembler	1230
		26	01	2.A.43		Holographic Device Module Remover	1235
		27	01	2.A.43		Holographic Device Module Installer	1234
		21	01	2.D.56		Heating/Cooling Device Disassembler	1244
		20	01	2.D.56		Heating/Cooling Device Assembler	1243
		26	01	2.D.56		Heating/Cooling Device Module Remover	1248
		27	01	2.D.56		Heating/Cooling Device Module Installer	1247
		21	01	2.D.50		Slip Cast Injection System Disassembler	1123
		20	01	2.D.50		Slip Cast Injection System Assembler	1124
		26	01	2.D.50		Slip Cast Injection System Module Remover	1119
		27	01	2.D.50		Slip Cast Injection System Module Installer	1120
		21	01	2.D.22		Vibrator Disassembler	1087
		20	01	2.D.22		Vibrator Assembler	1088

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-09-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT:							MISSION MODE: A
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.D.22		Vibrator Module Remover	1083
		27	01	2.D.22		Vibrator Module Installer	1084
		21	01	2.A.40	-1	Densitometer Disassembler	1463
		20	01	2.A.40	-1	Densitometer Assembler	1464
		26	01	2.A.40	-1	Densitometer Module Remover	1459
		27	01	2.A.40	-1	Densitometer Module Installer	1460
		21	01	2.D.51		Zone Refiner Disassembler	1434
		20	01	2.D.51		Zone Refiner Assembler	1435
		26	01	2.D.51		Zone Refiner Module Remover	1430
		27	01	2.D.51		Zone Refiner Module Installer	1431
		21	01	2.A.36	-2	Isotope Tracer-Counter Disassembler	1643
		20	01	2.A.36	-2	Isotope Tracer-Counter Assembler	1644
		26	01	2.A.36	-2	Isotope Tracer-Counter Module Remover	1638
		27	01	2.A.36	-2	Isotope Tracer-Counter Module Installer	1639

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-10-1	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	Maintain experiment equipment	21	01	2.B.06	-2	Materials Science C/D Equipment Disassembler	1036
		20	01	2.B.06	-2	Materials Science C/D Equipment Assembler	1037
		26	01	2.B.06	-2	Materials Science C/D Equipment Module Remover	1034
		27	01	2.B.06	-2	Materials Science C/D Equipment Module Installer	1035
		21	01	2.D.13	-2	Environmental Chamber Disassembler	1063
		21	01	2.D.13	-3	" " "	1063
		21	01	2.D.13	-4	" " "	1063
		20	01	2.D.13	-2	Environmental Chamber Assembler	1064
		20	01	2.D.13	-3	" " "	1064
		20	01	2.D.13	-4	" " "	1064
		26	01	2.D.13	-2	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-3	Environmental Chamber Module Remover	1059
		26	01	2.D.13	-4	Environmental Chamber Module Remover	1059
		27	01	2.D.13	-2	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-3	Environmental Chamber Module Installer	1060
		27	01	2.D.13	-4	Environmental Chamber Module Installer	1060
		21	01	2.D.15		Atmosphere Supply/Control System Disassembler	1130
		20	01	2.D.15		Atmosphere Supply/Control System Assembler	1131

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-10-2
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT:						MISSION MODE: A
5.1 Physical Properties of Fluids; Convection				BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
34	(Continued)	26	01	2.D.15	Atmosphere Supply/Control System Module Remover	1127
		27	01	2.D.15	Atmosphere Supply/Control System Module Installer	1128
		21	01	4.D.13	Power Conditioning/Distribution System Disassembler	1137
		20	01	4.D.13	Power Conditioning/Distribution System Assembler	1138
		26	01	4.D.13	Power Conditioning/Distribution System Module Remover	1134
		27	01	4.D.13	Power Conditioning/Distribution System Module Installer	1135
		21	01	2.D.24 -1	Furnace Disassembler	0986
		20	01	2.D.24 -1	Furnace Assembler	0987
		26	01	2.D.24 -1	Furnace Module Remover	0981
		27	01	2.D.24 -1	Furnace Module Installer	0982
		21	01	2.D.18	Dispersion Control System Disassembler	1111
		20	01	2.D.18	Dispersion Control System Assembler	1112
		26	01	2.D.18	Dispersion Control System Module Remover	1106
		27	01	2.D.18	Dispersion Control System Module Installer	1108
		21	01	2.D.21 -1	Mixing Unit Disassembler	1000
		21	01	2.D.21 -2	" " "	1000
		21	01	2.D.21 -3	" " "	1000
		20	01	2.D.21 -1	Mixing Unit Assembler	1001
		20	01	2.D.21 -2	" " "	1001
		20	01	2.D.21 -3	" " "	1001

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	MS-1
						PAGE	A-5.1-10-3
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	26	01	2.D.21	-1	Mixing Unit Module Remover	0995
		26	01	2.D.21	-2	" " " "	0995
		26	01	2.D.21	-3	" " " "	0995
		27	01	2.D.21	-1	Mixing Unit Module Installer	0996
		27	01	2.D.21	-2	" " " "	0996
		27	01	2.D.21	-3	" " " "	0996
		21	01	2.B.06	-1	Computer Disassembler	1056
		20	01	2.B.06	-1	Computer Assembler	1057
		26	01	2.B.06	-1	Computer Module Remover	0519
		27	01	2.B.06	-1	Computer Module Installer	0520
		21	01	4.D.14		Heat Rejection System Disassembler	1147
		20	01	4.D.14		Heat Rejection System Assembler	1148
		26	01	4.D.14		Heat Rejection System Module Remover	1143
		27	01	4.D.14		Heat Rejection System Module Installer	1144
		21	01	2.D.27		Materials Analysis Equipment Disassembler	1050
		20	01	2.D.27		Materials Analysis Equipment Assembler	1051
		26	01	2.D.27		Materials Analysis Equipment Module Remover	1044
		27	01	2.D.27		Materials Analysis Equipment Module Installer	1045
		21	01	2.A.17	-7	Camera Disassembler	0893
		20	01	2.A.17	-7	Camera Assembler	0894
		26	01	2.A.17	-7	Camera Module Remover	0158
		27	01	2.A.17	-7	Camera Module Installer	0160
		21	01	2.A.04	-3	TV Camera Disassembler	0900

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	MS-1
							PAGE	A-5.1-10-4
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space					
EXPERIMENT:			MISSION MODE: A					
5.1 Physical Properties of Fluids; Convection					BASIC FUNCTION: 10 Unscheduled Maintenance			
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
34	(Continued)	20	01	2.A.04	-3	TV Camera Assembler		0901
		26	01	2.A.04	-3	TV Camera Module Remover		0111
		27	01	2.A.04	-3	TV Camera Module Installer		0112
		21	01	2.A.43		Holographic Device Disassembler		1231
		20	01	2.A.43		Holographic Device Assembler		1230
		26	01	2.A.43		Holographic Device Module Remover		1235
		27	01	2.A.43		Holographic Device Module Installer		1234
		21	01	2.D.56		Heating/Cooling Device Disassembler		1244
		20	01	2.D.56		Heating/Cooling Device Assembler		1243
		26	01	2.D.56		Heating/Cooling Device Module Remover		1248
		27	01	2.D.56		Heating/Cooling Device Module Installer		1247
		21	01	2.D.50		Slip Cast Injection System Disassembler		1123
		20	01	2.D.50		Slip Cast Injection System Assembler		1124
		26	01	2.D.50		Slip Cast Injection System Module Remover		1119
		27	01	2.D.50		Slip Cast Injection System Module Installer		1120
		21	01	2.D.22		Vibrator Disassembler		1087
		20	01	2.D.22		Vibrator Assembler		1088
		26	01	2.D.22		Vibrator Module Remover		1083
		27	01	2.D.22		Vibrator Module Installer		1084
		21	01	2.A.40	-1	Densitometer Disassembler		1463
		20	01	2.A.40	-1	Densitometer Assembler		1464
		26	01	2.A.40	-1	Densitometer Module Remover		1459

FLIGHT EXPERIMENT TASK-SKILLS							SERIES MS-1
							PAGE A-5.1-10-5
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection						MISSION MODE: A	
							BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
34	(Continued)	27	01	2.A.40	-1	Densitometer Module Installer	1460
		21	01	2.D.51		Zone Refiner Disassembler	1434
		20	01	2.D.51		Zone Refiner Assembler	1435
		26	01	2.D.51		Zone Refiner Module Remover	1430
		27	01	2.D.51		Zone Refiner Module Installer	1431
		21	01	2.A.36	-2	Isotope Tracer-Counter Disassembler	1643
		20	01	2.A.36	-2	Isotope Tracer-Counter Assembler	1644
		26	01	2.A.36	-2	Isotope Tracer-Counter Module Remover	1638
		27	01	2.A.36	-2	Isotope Tracer-Counter Module Installer	1639
48	Repair experiment equipment	07	01	2.D.13	-2	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-3	Environmental Chamber Fault Identifier	1066
		07	01	2.D.13	-4	Environmental Chamber Fault Identifier	1066
		07	01	4.C.02		Environmental Chamber Fault Identifier	1066
		28	01	2.D.13	-2	Environmental Chamber Repairer	1065
		28	01	2.D.13	-3	" " "	1065
		28	01	2.D.13	-4	" " "	1065
		07	01	2.B.06	-2	Materials Science C/D Equipment Fault Identifier	1039
		28	01	2.B.06	-2	Materials Science C/D Equipment Repairer	1038
		07	01	2.D.15		Atmosphere Supply/Control System Fault Identifier	1133

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-10-6
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
					BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	07	01	4.C.02	Atmosphere Supply/Control System Fault Identifier	1133
		28	01	2.D.15	Atmosphere Supply/Control System Repairer	1132
		07	01	4.D.13	Power Conditioning/Distribution System Fault Identifier	1140
		07	01	4.C.02	Power Conditioning/Distribution System Fault Identifier	1140
		28	01	4.D.13	Power Conditioning/Distribution System Repairer	1139
		07	01	2.D.24	Furnace Fault Identifier	0989
		07	01	4.C.02	" " "	0989
		28	01	2.D.24	Furnace Repairer	0988
		07	01	2.D.18	Dispersion Control System Fault Identifier	1114
		07	01	4.C.02	Dispersion Control System Fault Identifier	1114
		28	01	2.D.18	Dispersion Control System Repairer	1113
		07	01	2.D.21	Mixing Unit Fault Identifier	1003
		07	01	2.D.21	" " " "	1003
		07	01	2.D.21	" " " "	1003
		07	01	4.C.02	" " " "	1003
		28	01	2.D.21	Mixing Unit Repairer	1002
		28	01	2.D.21	" " "	1002
		07	01	2.B.06	Computer Fault Identifier	0523
		07	01	4.C.02	" " "	0523
		28	01	2.B.06	Computer Repairer	0540
		07	01	4.D.14	Heat Rejection System Fault Identifier	1150

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1
						PAGE A-5.1-10-7
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space			
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection					MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
48	(Continued)	28	01	4.D.14	Heat Rejection System Repairer	1149
		07	01	2.D.27	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.02	Materials Analysis Equipment Fault Identifier	1053
		07	01	4.C.07	Materials Analysis Equipment Fault Identifier	1053
		28	01	2.D.27	Materials Analysis Equipment Repairer	1052
		07	01	2.A.17	-7 Camera Fault Identifier	0886
		07	01	4.C.02	" " "	0886
		28	01	2.A.17	-7 Camera Repairer	1195
		07	01	2.A.04	-3 TV Camera Fault Identifier	0689
		07	01	4.C.02	" " " "	0689
		28	01	2.A.04	-3 TV Camera Repairer	0690
		07	01	2.A.43	Holographic Device Fault Identifier	1233
		07	01	4.C.02	Holographic Device Fault Identifier	1233
		28	01	2.A.43	Holographic Device Repairer	1232
		07	01	2.D.56	Heating/Cooling Device Fault Identifier	1246
		07	01	4.C.02	Heating/Cooling Device Fault Identifier	1246
		28	01	2.D.56	Heating/Cooling Device Repairer	1245
		07	01	2.D.50	Slip Cast Injection System Fault Identifier	1126
		07	01	4.C.02	Slip Cast Injection System Fault Identifier	1126
		28	01	2.D.50	Slip Cast Injection System Repairer	1125

FLIGHT EXPERIMENT TASK-SKILLS						SERIES MS-1	
						PAGE A-5.1-10-8	
DISCIPLINE: Materials Science & Mfg.			FPE/SUBGROUP: MS-1 Materials Science & Manufacturing in Space				
EXPERIMENT: 5.1 Physical Properties of Fluids; Convection			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
48	(Continued)	07	01	2.A.40	-1	Densitometer Fault Identifier	1465
		07	01	4.C.02		" " "	1465
		28	01	2.A.40	-1	Densitometer Repairer	1466
		07	01	2.D.51		Zone Refiner Fault Identifier	1436
		07	01	4.C.02		" " " "	1436
		28	01	2.D.51		Zone Refiner Repairer	1437
		07	01	2.A.36	-2	Isotope Tracer-Counter Fault Identifier	1645
		07	01	4.C.02		Isotope Tracer-Counter Fault Identifier	1645
		28	01	2.A.36	-2	Isotope Tracer-Counter Repairer	1646

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-1 Space Physics Research Laboratory

MISSION MODE: B - Shuttle-Serviced Free Flyer,
extended duration

EXPERIMENTS:

- 1.0 Atmospheric and Magnetospheric
Science (Including Aurora)
- 2.0 Cometary Physics - Gaseous Release
of NH_3 and ICN^{16}
- 3.0 Meteoroid Science
- 4.0 Small Astronomy Telescopes

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-1 Space Physics Research Laboratory

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

1.0 Atmospheric and Magnetospheric Science
(Including Aurora)

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-04-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Mount spectrometer on extendable rails of airlock	27	01	2.A.03	-5	Spectrometer Installer	0006
		27	01	1.A.01		" "	0006
14	Remove spectrometer from storage area	18	01	2.A.03		Spectrometer Unstower	0007
15	Carry spectrometer to appropriate airlock	22	01	1.A.01	-2	Spectrometer Translocator	0008
		22	01	1.A.01	-1	" "	0008
		22	01	5.A.01		" "	0008
		22	01	2.A.03		" "	0008
16	Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0009
17	Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
19	Select appropriate cabling for spectrometer	13	01	2.E.01		Spectrometer Cable Selector	0028
		13	01	2.A.03		" " "	0028
20	Route spectrometer cables through airlock feedthrough	27	01	1.A.01	-4	Spectrometer Cable Router	0029
		27	01	2.E.01		" " "	0029
21	Connect cabling to spectrometer	27	01	2.A.03		Spectrometer Cable Connector	0030
		27	01	2.E.01		" " "	0030
22	Close airlock inside hatch	27	01	1.A.01	-3	Airlock Inside Hatch Closer	0031
23	Evacuate airlock to space	15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
24	Open airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-1.0-04-2		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION	TITLE					NO.		
25	Move instrument assembly and extend- able rails to outside	15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034		
26	Activate instrument power	15	01	2.B.02	-2	Instrument Power Actuator	0035		
27	Set spectrometer controls to proper settings on control panel	15	01	2.B.02	-3	Spectrometer Control Actuator	0036		
28	Monitor displays for proper opera- tion of spectrometer	01	01	2.B.02	-3	Spectrometer Operating Status Monitor	0037		
29	Determine that spectrometer is operating properly	13 13	01 01	2.A.03 2.B.02	-3	Spectrometer Fault Identifier " " "	0038 0038		
39	Attach camera to scanning grating spectrometer	27 27	01 01	2.A.03 4.D.04	-2 -3	Camera Installer " "	0039 0039		
42	Mount high purity target foil on exterior of spacecraft	22 22 22 27 27 22 27	02 02 02 02 02 02 02	2.A.11 1.A.01 5.A.01 1.A.01 2.A.11 4.E.02 4.E.02	-1 -1 -6 -1	Particle Sensor Translocator " " " " " " Particle Sensor Installer " " " Particle Sensor Translocator Particle Sensor Installer	0020 0020 0020 0140 0140 0020 0140		

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
DISCIPLINE: Physics						PAGE B-1.0-04-3	
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
49	Check for proper tuning of mass spectrometer	14	01	2.A.03	-4	Spectrometer Tuning Tester	0040
		14	01	2.A.03	-5	" " "	0040
		14	01	2.A.03	-6	" " "	0040
52	Mount neutral atmosphere temperature spherical chamber on rotating arm	20	01	2.A.06	-1	Gas Temperature Chamber Assembler	0041
53	Mount neutral atmosphere temperature chamber assembly on extendable boom	27	01	2.A.06	-1	Gas Temperature Chamber Installer	0042
		27	01	1.A.01	-5	" " " "	0042
57	Mount positive ion mass spectrometer in forward-looking section of spacecraft	22	01	1.A.01	-2	Spectrometer Translocator	0008
		22	01	1.A.01	-1	" "	0008
		22	01	5.A.01		" "	0008
		27	01	2.A.03	-6	Spectrometer Installer	0006
		27	01	1.A.01	-7	" "	0006
75	Change spectrometer gratings	26	01	2.A.03		Spectrometer Grating Remover	0043
		27	01	2.A.03		Spectrometer Grating Installer	0044
77	Change film cartridges	26	01	4.D.04	-1	Film Cartridge Remover	0045
		26	01	4.D.04	-3	" " "	0045
		27	01	4.D.04	-1	Film Cartridge Installer	0046
		27	01	4.D.04	-3	" " "	0046
80	Mount ambient environment sensors on spacecraft exterior surface						

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
DISCIPLINE: Physics						PAGE B-1.0-04-4	
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
80	.1 Mount open source mass spectro- meter spacecraft exterior surface	22	02	1.A.01	-1	Spectrometer Translocator	0008
		22	02	5.A.01		" "	0008
		27	02	1.A.01	-8	Spectrometer Installer	0006
		27	02	2.A.03	-4	" "	0006
		27	02	4.E.02		" "	0006
		22	02	4.E.02		Spectrometer Translocator	0008
		27	02	1.A.01	-6	Spectrometer Installer	0006
		22	02	2.A.03	-4	Spectrometer Translocator	0008
80	.2 Mount closed source mass spec- trometer on spacecraft exterior surface	22	02	1.A.01	-1	Spectrometer Translocator	0008
		22	02	5.A.01		" "	0008
		27	02	1.A.01	-8	Spectrometer Installer	0006
		27	02	2.A.03	-5	" "	0006
		27	02	4.E.02		" "	0006
		22	02	4.E.02		Spectrometer Translocator	0008
		27	02	1.A.01	-6	Spectrometer Installer	0006
		27	02	2.A.03	-5	Spectrometer Translocator	0008
80	.3 Mount neutral gas temperature chamber on spacecraft exterior surface	22	02	1.A.01	-1	Gas Temperature Chamber Translocator	0025
		22	02	5.A.01		Gas Temperature Chamber Translocator	0025
		27	02	1.A.01	-8	Gas Temperature Chamber Installer	0042
		27	02	2.A.06	-1	" " " "	0042
		27	02	4.E.02		" " " "	0042
		22	02	4.E.02		Gas Temperature Chamber Translocator	0025
		27	02	1.A.01	-6	Gas Temperature Chamber Installer	0042
		22	02	2.A.06	-1	Gas Temperature Chamber Trans- locator	0025

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1	
							PAGE	B-1.0-04-5	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)							MISSION MODE: B		
BASIC FUNCTION: 04 Experiment Setup									
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
80	.4 Mount ion mass spectrometer on spacecraft exterior surface	22	02	1.A.01	-1	Spectrometer Translocator	0008		
		22	02	5.A.01		" "	0008		
		27	02	1.A.01	-8	Spectrometer Installer	0006		
		27	02	2.A.03	-6	" "	0006		
		27	02	4.E.02		" "	0006		
		22	02	4.E.02		Spectrometer Translocator	0008		
		27	02	1.A.01	-6	Spectrometer Installer	0006		
		22	02	2.A.03	-6	Spectrometer Translocator	0008		
80	.5 Mount ion trap on spacecraft exterior surface	22	02	1.A.01	-1	Ion Trap Translocator	0024		
		22	02	5.A.01		" " "	0024		
		27	02	1.A.01	-8	Ion Trap Installer	0049		
		27	02	2.A.07	-1	" " "	0049		
		27	02	4.E.02		" " "	0049		
		22	02	4.E.02		Ion Trap Translocator	0024		
		27	02	1.A.01	-6	Ion Trap Installer	0049		
		22	02	2.A.07	-1	Ion Trap Translocator	0024		
80	.6 Mount electrostatic probe on spacecraft exterior surface	22	02	1.A.01	-1	Probe Translocator	0023		
		22	02	5.A.01		" "	0023		
		27	02	1.A.01	-8	Probe Installer	0050		
		27	02	2.A.08	-1	" "	0050		
		27	02	4.E.02		" "	0050		
		22	02	4.E.02		Probe Translocator	0023		
		22	02	2.A.08	-1	" "	0023		
		27	02	1.A.01	-6	Probe Installer	0050		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-04-6
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
80	.7 Mount electric field probe on spacecraft exterior surface	22	02	1.A.01	-1	Probe Translocator	0023
		22	02	5.A.01		" "	0023
		27	02	1.A.01	-8	Probe Installer	0050
		27	02	2.A.08	-2	" "	0050
		27	02	4.E.02		" "	0050
		22	02	4.E.02		Probe Translocator	0023
		22	02	2.A.08	-2	" "	0023
		27	02	1.A.01	-6	Probe Installer	0050
80	.8 Mount flux gate magnetometer on spacecraft exterior surface	22	02	1.A.01	-1	Magnetometer Translocator	0022
		22	02	5.A.01		" "	0022
		27	02	1.A.01	-8	Magnetometer Installer	0051
		27	02	2.A.09	-1	" "	0051
		27	02	4.E.02		" "	0051
		22	02	4.E.02		Magnetometer Translocator	0022
		22	02	2.A.09	-1	" "	0022
		27	02	1.A.01	-6	Magnetometer Installer	0051
80	.9 Mount magnetometer coil on spacecraft exterior surface	22	02	1.A.01	-1	Magnetometer Translocator	0022
		22	02	5.A.01		" "	0022
		27	02	1.A.01	-8	Magnetometer Installer	0051
		27	02	2.A.09	-2	" "	0051
		27	02	4.E.02		" "	0051
		22	02	4.E.02		Magnetometer Translocator	0022
		22	02	2.A.09	-2	" "	0022
		27	02	1.A.01	-6	Magnetometer Installer	0051

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1	
							PAGE B-1.0-04-7		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
80	.10 Mount VLF sensor on spacecraft exterior surface	22	02	1.A.01	-1	VLF Sensor Translocator	0021		
		22	02	5.A.01		" " "	0021		
		27	02	1.A.01	-8	VLF Sensor Installer	0052		
		27	02	2.A.10	-1	" " "	0052		
		27	02	4.E.02		" " "	0052		
		22	02	4.E.02		VLF Sensor Translocator	0021		
		22	02	2.A.10	-1	" " "	0021		
		27	02	1.A.01	-6	VLF Sensor Installer	0052		
81	Mount ambient environment sensors on extendable boom								
81	.1 Mount open source mass spectrometer on airlock extendable boom	27	01	2.A.03	-4	Spectrometer Installer	0006		
		27	01	1.A.01	-5	" "	0006		
		27	01	1.A.01	-6	" "	0006		
81	.2 Mount closed source mass spectrometer on airlock extendable boom	27	01	2.A.03	-5	Spectrometer Installer	0006		
		27	01	1.A.01	-5	" "	0006		
		27	01	1.A.01	-6	" "	0006		
81	.3 Mount ion mass spectrometer on airlock extendable boom	27	01	2.A.03	-6	Spectrometer Installer	0006		
		27	01	1.A.01	-5	" "	0006		
		27	01	1.A.01	-6	" "	0006		
81	.4 Mount ion trap on airlock extendable boom	27	01	2.A.07	-1	Ion Trap Installer	0049		
		27	01	1.A.01	-5	" " "	0049		
		27	01	1.A.01	-6	" " "	0049		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-04-8
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
81	.5 Mount electrostatic probe on airlock extendable boom	27	01	2.A.08	-1	Probe Installer	0050
		27	01	1.A.01	-5	" "	0050
		27	01	1.A.01	-6	" "	0050
81	.6 Mount electric field probe on airlock extendable boom	27	01	2.A.08	-2	Probe Installer	0050
		27	01	1.A.01	-5	" "	0050
		27	01	1.A.01	-6	" "	0050
81	.7 Mount flux gate magnetometer on airlock extendable boom	27	01	2.A.09	-1	Magnetometer Installer	0051
		27	01	1.A.01	-5	" "	0051
		27	01	1.A.01	-6	" "	0051
81	.8 Mount magnetometer coil on airlock extendable boom	27	01	2.A.01	-2	Magnetometer Installer	0051
		27	01	1.A.01	-5	" "	0051
		27	01	1.A.01	-6	" "	0051
81	.9 Mount VLF sensor on airlock extendable boom	27	01	2.A.10	-1	VLF Sensor Installer	0052
		27	01	1.A.01	-5	" " "	0052
		27	01	1.A.01	-6	" " "	0052
87	Remove sensors from storage						
87	.1 Remove photometric cluster from storage area	18	01	2.A.02	-1	Photometer Unstower	0053
		18	01	1.A.03	-1	" "	0053

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1
							PAGE	B-1.0-04-9
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:						MISSION MODE: B		
1.0 Atmospheric and Magnetospheric Science (Including Aurora)						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
87	.2 Remove IR interferometer spectrometer from storage area	18	01	2.A.03	-1	Spectrometer Unstower	0007	
		18	01	1.A.03	-1	" "	0007	
87	.3 Remove scanning grating spectrometer from storage area	18	01	2.A.03	-2	Spectrometer Unstower	0007	
		18	01	1.A.03	-1	" "	0007	
87	.4 Remove EUV spectrometer from storage area	18	01	2.A.03	-3	Spectrometer Unstower	0007	
		18	01	1.A.03	-1	" "	0007	
87	.5 Remove image isocon TV camera from storage area	18	01	2.A.04	-1	TV Camera Unstower	0054	
		18	01	1.A.03	-1	" " "	0054	
87	.6 Remove open source mass spectrometer from storage area	18	01	2.A.03	-4	Spectrometer Unstower	0007	
		18	01	1.A.03	-1	" "	0007	
87	.7 Remove closed source mass spectrometer from storage area	18	01	2.A.03	-5	Spectrometer Unstower	0007	
		18	01	1.A.03	-1	" "	0007	
87	.8 Remove neutral gas temperature chamber and rotating arm from storage area	18	01	2.A.06	-1	Gas Temperature Chamber Unstower	0055	
		18	01	1.A.03	-1	" " " "	0055	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
DISCIPLINE: Physics							PAGE B-1.0-04-10
EXPERIMENT: FPE/SUBGROUP: P-1 - Space Physics Research Laboratory							MISSION MODE: B
1.0 Atmospheric and Magnetospheric Science (Including Aurora)							BASIC FUNCTION: 04 Experiment Setup
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
87	.9 Remove ion mass spectrometer from storage area	18	01	2.A.03	-6	Spectrometer Unstower	0007
		18	01	1.A.03	-1	" "	0007
87	.10 Remove ion trap from storage area	18	01	2.A.07	-1	Ion Trap Unstower	0056
		18	01	1.A.03	-1	" " "	0056
87	.11 Remove electrostatic probe from storage area	18	01	2.A.08	-1	Probe Unstower	0057
		18	01	1.A.03	-1	" "	0057
87	.12 Remove electric field probe from storage area	18	01	2.A.08	-2	Probe Unstower	0057
		18	01	1.A.03	-1	" "	0057
87	.13 Remove flux gate magnetometer from storage area	18	01	2.A.09	-1	Magnetometer Unstower	0058
		18	01	1.A.03	-1	" "	0058
87	.14 Remove magnetometer coil from storage area	18	01	2.A.09	-2	Magnetometer Unstower	0058
		18	01	1.A.03	-1	" "	0058
87	.15 Remove VLF sensor from storage area	18	01	2.A.10	-1	VLF Sensor Unstower	0059
		18	01	1.A.03	-1	" " "	0059

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
						PAGE B-1.0-04-11	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 Space Physics Research Laboratory				
EXPERIMENT:						MISSION MODE: B	
1.0 Atmospheric and Magnetospheric Science (Including Aurora)						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
87	.16 Remove aluminum foil exposure device from storage area	18	01	2.A.11	-1	Particle Sensor Unstower	0060
		18	01	1.A.03	-1	" " "	0060
87	.17 Remove particle sensor cluster from storage area	18	01	2.A.11	-2	Particle Sensor Unstower	0060
		18	01	1.A.03	-1	" " "	0060

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
DISCIPLINE: Physics						PAGE B-1.0-05-1	
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNC NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0001
17	Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
18	Remove unneeded or conflicting instruments from airlock						
18	.1 Remove open source mass spectrometer from airlock extendable boom	26	01	2.A.03	-4	Spectrometer Remover	0315
		26	01	1.A.01	-5	" "	0315
		22	01	1.A.01	-1	Spectrometer Translocator	0008
		22	01	5.A.01		" "	0008
		22	01	1.A.01	-2	" "	0008
		26	01	1.A.01	-6	Spectrometer Remover	0315
18	.2 Remove closed source mass spectrometer from airlock extendable boom	26	01	2.A.03	-5	Spectrometer Remover	0315
		26	01	1.A.01	-5	" "	0315
		22	01	1.A.01	-1	Spectrometer Translocator	0008
		22	01	5.A.01		" "	0008
		22	01	1.A.01	-2	" "	0008
		26	01	1.A.01	-6	Spectrometer Remover	0315
18	.3 Remove ion mass spectrometer from airlock extendable boom	26	01	2.A.03	-6	Spectrometer Remover	0315
		26	01	1.A.01	-5	" "	0315
		22	01	1.A.01	-1	Spectrometer Translocator	0008
		22	01	5.A.01		" "	0008
		22	01	1.A.01	-2	" "	0008
		26	01	1.A.01	-6	Spectrometer Remover	0315

FLIGHT EXPERIMENT TASK-SKILLS

SERIES P-1

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DISCIPLINE: Physics

FPE/SUBGROUP: P-1 - Space Physics Research Laboratory

EXPERIMENT:

MISSION MODE: B

1.0 Atmospheric and Magnetospheric Science (Including Aurora)

BASIC FUNCTION: 05 Experiment Shutdown

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	.4 Remove ion trap from airlock extendable boom	26	01	2.A.07	-1	Ion Trap Remover	0014
		26	01	1.A.01	-5	" " "	0014
		22	01	1.A.01	-1	Ion Trap Translocator	0024
		22	01	5.A.01		" " "	0024
		22	01	1.A.01	-2	" " "	0024
		26	01	1.A.01	-6	Ion Trap Remover	0014
18	.5 Remove electrostatic probe from airlock extendable boom	26	01	2.A.08	-1	Probe Remover	0013
		26	01	1.A.01	-5	" "	0013
		22	01	1.A.01	-1	Probe Translocator	0023
		22	01	5.A.01		" "	0023
		22	01	1.A.01	-2	" "	0023
		26	01	1.A.01	-6	Probe Remover	0013
18	.6 Remove electric field probe from airlock extendable boom	26	01	2.A.08	-2	Probe Remover	0013
		26	01	1.A.01	-5	" "	0013
		22	01	1.A.01	-1	Probe Translocator	0023
		22	01	5.A.01		" "	0023
		22	01	1.A.01	-2	" "	0023
		26	01	1.A.01	-6	Probe Remover	0013
18	.7 Remove flux gate magnetometer from airlock extendable boom	26	01	2.A.09	-1	Magnetometer Remover	0011
		26	01	1.A.01	-5	" "	0011
		22	01	1.A.01	-1	Magnetometer Translocator	0022
		22	01	5.A.01		" "	0022
		22	01	1.A.01	-2	" "	0022
		26	01	1.A.01	-6	Magnetometer Remover	0011

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1		
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DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT:						MISSION MODE: B		
1.0 Atmospheric and Magnetospheric Science (Including Aurora)						BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
18	.8 Remove magnetometer coil from airlock extendable boom	26	01	2.A.09	-2	Magnetometer Remover	0011	
		26	01	1.A.01	-5	" "	0011	
		22	01	1.A.01	-1	Magnetometer Translocator	0022	
		22	01	5.A.01		" "	0022	
		22	01	1.A.01	-2	" "	0022	
		26	01	1.A.01	-6	Magnetometer Remover	0011	
18	.9 Remove VLF sensor from airlock extendable boom	26	01	2.A.10	-1	VLF Sensor Remover	0012	
		26	01	1.A.01	-5	" " "	0012	
		22	01	1.A.01	-1	VLF Sensor Translocator	0021	
		22	01	5.A.01		" " "	0021	
		22	01	1.A.01	-2	" " "	0021	
		26	01	1.A.01	-6	VLF Sensor Remover	0012	
18	.10 Remove neutral atmosphere temperature chamber from airlock extendable boom	26	01	2.A.06	-1	Gas Temperature Chamber Remover	0019	
		26	01	1.A.01	-5	" " " "	0019	
		22	01	1.A.01	-1	Gas Temperature Chamber Translocator	0025	
		22	01	5.A.01		" " "	0025	
		22	01	1.A.01	-2	" " "	0025	
		26	01	1.A.01	-6	Gas Temperature Chamber Remover	0019	
43	Recover exposed foil from side of spacecraft exterior	25	02	1.A.01	-1	Spacecraft Exterior Translationer	0061	
		25	02	5.A.01		" " "	0061	
		26	02	2.A.11	-1	Particle Sensor Remover	0017	
		26	02	1.A.01	-8	" " "	0017	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-1.0-05-4		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT:							MISSION MODE: B		
1.0 Atmospheric and Magnetospheric Science (Including Aurora)					BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
43	(Continued)	22	02	1.A.01	-1	Particle Sensor Translocator	0020		
		22	02	5.A.01		" " "	0020		
		25	02	4.E.02		Spacecraft Exterior Translationer	0061		
		25	02	2.A.11	-1	" " "	0061		
		26	02	4.E.02		Particle Sensor Remover	0017		
		26	02	1.A.01	-6	" " "	0017		
		22	02	4.E.02		Particle Sensor Translocator	0020		
		22	02	2.A.11	-1	" " "	0020		
86	Store sensors within spacecraft								
86	.1 Store photometric cluster in spacecraft storage area	17	01	2.A.02	-1	Photometer Stower	0062		
		17	01	1.A.03	-1	" "	0062		
86	.2 Store IR interferometer spectrometer in spacecraft storage area	17	01	2.A.03	-1	Spectrometer Stower	0063		
		17	01	1.A.03	-1	" "	0063		
86	.3 Store scanning grating spectrometer in spacecraft storage area	17	01	2.A.03	-2	Spectrometer Stower	0063		
		17	01	1.A.03	-1	" "	0063		
86	.4 Store EUV spectrometer in spacecraft storage area	17	01	2.A.03	-3	Spectrometer Stower	0063		
		17	01	1.A.03	-1	" "	0063		
86	.5 Store image isocon TV camera in spacecraft storage area	17	01	2.A.04	-1	TV Camera Stower	0064		
		17	01	1.A.03	-1	" " "	0064		

FLIGHT EXPERIMENT TASK-SKILLS										SERIES P-1	
										PAGE B-1.0-05-5	
DISCIPLINE: Physics					FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)										MISSION MODE: B	
										BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL					
NO.	DESCRIPTION					TITLE	NO.				
86	.6 Store open source mass spectro- meter in spacecraft storage area	17	01	2.A.03	-4	Spectrometer Stower		0063			
		17	01	1.A.03	-1	" "	0063				
86	.7 Store closed source mass spec- trometer in spacecraft storage area	17	01	2.A.03	-5	Spectrometer Stower		0063			
		17	01	1.A.03	-1	" "	0063				
86	.8 Store neutral gas temperature chamber and rotating arm in space- craft storage area	17	01	2.A.06	-1	Gas Temperature Chamber Stower		0065			
		17	01	1.A.03	-1	" " " "	0065				
86	.9 Store ion mass spectrometer in spacecraft storage area	17	01	2.A.03	-6	Spectrometer Stower		0063			
		17	01	1.A.03	-1	" "	0063				
86	.10 Store ion trap in spacecraft storage area	17	01	2.A.07	-1	Ion Trap Stower		0066			
		17	01	1.A.03	-1	" " "	0066				
86	.11 Store electrostatic probe in spacecraft storage area	17	01	2.A.08	-1	Probe Stower		0067			
		17	01	1.A.03	-1	" "	0067				
86	.12 Store electric field probe in spacecraft storage area	17	01	2.A.08	-2	Probe Stower		0067			
		17	01	1.A.03	-1	" "	0067				

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-1.0-05-6		
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT:							MISSION MODE: B		
1.0 Atmospheric and Magnetospheric Science (Including Aurora)							BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
86	.13 Store flux gate magnetometer in spacecraft storage area	17	01	2.A.09	-1	Magnetometer Stower			0068
		17	01	1.A.03	-1	" "			0068
86	.14 Store magnetometer coil in spacecraft storage area	17	01	2.A.09	-2	Magnetometer Stower			0068
		17	01	1.A.03	-1	" "			0068
86	.15 Store VLF sensor in spacecraft storage area	17	01	2.A.10	-1	VLF Sensor Stower			0069
		17	01	1.A.03	-1	" " "			0069
86	.16 Store aluminum foil exposure device in spacecraft storage area	17	01	2.A.11	-1	Particle Sensor Stower			0070
		17	01	1.A.03	-1	" " "			0070
86	.17 Store particle sensor clusters in spacecraft storage area	17	01	2.A.11	-2	Particle Sensor Stower			0070
		17	01	1.A.03	-1	" " "			0070

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-09-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
BASIC FUNCTION: 09 Scheduled Maintenance							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	Place calibration lamps in front of entrance apertures						
31	.1 Place calibration lamps in front of spectrometer apertures (inside)	27	01	4.C.01	-1	Calibration Equipment Installer	0071
		27	01	2.A.03		" " "	0071
31	.2 Move calibration lamps in front of spectrometer apertures (outside)	15	01	2.B.02	-3	Spectrometer Control Actuator	0036
32	Calibrate spectrometers, in situ	08	01	4.C.01	-1	Spectrometer Calibrator	0072
		08	01	2.A.03		" "	0072
		08	01	2.B.02	-3	" "	0072
49	Check mass spectrometers for proper tuning	08	01	2.A.03	-4	Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072
		08	01	2.A.03	-5	" "	0072
		08	01	2.A.03	-6	" "	0072
75	Change spectrometer gratings	26	01	2.A.03		Spectrometer Grating Remover	0043
		27	01	2.A.03		Spectrometer Grating Installer	0044
76	Examine optical elements of spectrometers for contamination and deterioration	03	01	2.A.03	-1	Spectrometer Optics Inspector	0073
		03	01	2.A.03	-2	" " "	0073
		03	01	2.A.03	-3	" " "	0073
77	Change film cartridges	26	01	4.D.04	-3	Film Cartridge Remover	0045

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-09-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
77	(Continued)	26	01	4.D.04	-1	Film Cartridge Remover	0045
		27	01	4.D.04	-1	Film Cartridge Installer	0046
		27	01	4.D.04	-3	" " "	0046
79	Perform maintenance functions						
79	.1 Inspect optical elements of instruments for contamination and deterioration	03	01	4.D.04	-3	Camera Lens Inspector	0074
		03	01	2.A.02	-1	Photometer Optics Inspector	0075
		03	01	2.A.04	-1	TV Camera Optics Inspector	0076
79	.2 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03	01	2.A.02	-1	Photometer Assembly Inspector	0077
		03	01	2.A.03	-1	Spectrometer Assembly Inspector	0078
		03	01	2.A.04	-1	TV Camera Inspector	0079
		03	01	2.A.06	-1	Gas Temperature Chamber Inspector	0080
		03	01	2.A.07	-1	Ion Trap Assembly Inspector	0081
		03	01	2.A.08	-1	Probe Assembly Inspector	0082
		03	01	2.A.09	-1	Magnetometer Assembly Inspector	0083
		03	01	2.A.10	-1	VLF Sensor Assembly Inspector	0084
		03	01	2.A.11	-2	Particle Sensor Assembly Inspector	0085
		03	01	2.A.08	-2	Probe Assembly Inspector	0082
		03	01	2.A.09	-2	Magnetometer Assembly Inspector	0083
		03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078
		03	01	2.A.03	-3	" " "	0078
		03	01	2.A.03	-4	" " "	0078
		03	01	2.A.03	-5	" " "	0078
		03	01	2.A.03	-6	" " "	0078

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
						PAGE B-1.0-09-3	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:			MISSION MODE: B				
1.0 Atmospheric and Magnetospheric Science (Including Aurora)			BASIC FUNCTION: 09 Scheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
79	.4 Calibrate instruments as scheduled	08	01	2.A.02	-1	Photometer Calibrator	0086
		08	01	2.A.03	-1	Spectrometer Calibrator	0072
		08	01	2.A.03	-2	" "	0072
		08	01	2.A.03	-3	" "	0072
		08	01	2.A.03	-4	" "	0072
		08	01	2.A.03	-5	" "	0072
		08	01	2.A.03	-6	" "	0072
		08	01	2.A.06	-1	Gas Temperature Chamber Calibrator	0087
		08	01	2.A.07	-1	Ion Trap Calibrator	0088
		08	01	2.A.08	-1	Probe Calibrator	0089
		08	01	2.A.08	-2	" "	0089
		08	01	2.A.09	-1	Magnetometer Calibrator	0090
		08	01	2.A.10	-1	VLF Sensor Calibrator	0091
		08	01	2.A.11	-2	Particle Sensor Calibrator	0092
		08	01	4.C.01	-1	Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072
79	.5 Clean and/or decontaminate instrument optics	19	01	4.D.06		Optical Equipment Cleaner	0093
		19	01	2.A.02	-1	Photometer Optics Cleaner	0094
		19	01	2.A.03	-1	Spectrometer Optics Cleaner	0095
		19	01	2.A.03	-2	" " "	0095
		19	01	2.A.03	-3	" " "	0095
		19	01	2.A.04	-1	TV Camera Optics Cleaner	0096
		19	01	4.D.04	-3	Camera Lens Cleaner	0097

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-1.0-10-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:				MISSION MODE: B				
1.0 Atmospheric and Magnetospheric Science (Including Aurora)				BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
31	Place calibration lamps in front of entrance apertures							
31	.1 Place calibration lamps in front of spectrometer apertures (inside)	27 27	01 01	4.C.01 2.A.03	-1	Calibration Equipment Installer " " "	0071 0071	
31	.2 Move calibration lamps in front of spectrometer apertures (outside)	15	01	2.B.02	-3	Spectrometer Control Actuator	0036	
32	Calibrate spectrometers, in situ	08 08 08	01 01 01	4.C.01 2.A.03 2.B.02	-1 -3	Spectrometer Calibrator " " " "	0072 0072 0072	
49	Check mass spectrometers for proper tuning	08 08 08 08	01 01 01 01	4.C.01 2.A.02 2.A.03 2.A.02	-2 -4 -5 -6	Spectrometer Calibrator " " " " " "	0072 0072 0072 0072	
75	Change spectrometer gratings	26 27	01 01	2.A.02 2.A.03		Spectrometer Grating Remover Spectrometer Grating Installer	0043 0044	
76	Examine optical elements of spectrometers for contamination and deterioration	03 03 03	01 01 01	2.A.03 2.A.03 2.A.03	-1 -2 -3	Spectrometer Optics Inspector " " " " " "	0073 0073 0073	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
						PAGE	B-1.0-10-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
77	Change film cartridges	26	01	4.D.04	-3	Film Cartridge Remover	0045
		26	01	4.D.04	-1	" " "	0045
		27	01	4.D.04	-1	Film Cartridge Installer	0046
		27	01	4.D.04	-3	" " "	0046
79	Maintain experiment equipment						
79	.1 Inspect optical elements of instruments for contamination and deterioration	03	01	4.D.04	-3	Camera Lens Inspector	0074
		03	01	2.A.02	-1	Photometer Optics Inspector	0075
		03	01	2.A.04	-1	TV Camera Optics Inspector	0076
79	.2 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03	01	2.A.02	-1	Photometer Assembly Inspector	0077
		03	01	2.A.03	-1	Spectrometer Assembly Inspector	0078
		03	01	2.A.04	-1	TV Camera Inspector	0079
		03	01	2.A.06	-1	Gas Temperature Chamber Inspector	0080
		03	01	2.A.07	-1	Ion Trap Assembly Inspector	0081
		03	01	2.A.08	-1	Probe Assembly Inspector	0082
		03	01	2.A.09	-1	Magnetometer Assembly Inspector	0083
		03	01	2.A.10	-1	VLF Sensor Assembly Inspector	0084
		03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078
		03	01	2.A.03	-3	" " "	0078
		03	01	2.A.03	-4	" " "	0078
		03	01	2.A.03	-5	" " "	0078
		03	01	2.A.03	-6	" " "	0078
		03	01	2.A.11	-2	Particle Sensor Assembly Inspector	0085
		03	01	2.A.08	-2	Probe Assembly Inspector	0082
		03	01	2.A.09	-2	Magnetometer Assembly Inspector	0083

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
						PAGE B-1.0-10-3	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:			MISSION MODE: B				
1.0 Atmospheric and Magnetospheric Science (Including Aurora)			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
79	.3 Fault isolate electrical and electronic instruments to identify causes of malfunctions	07	01	2.A.02	-1	Photometer Fault Identifier	1856
		07	01	2.A.03	-1	Spectrometer Fault Identifier	0038
		07	01	2.A.03	-2	" " "	0038
		07	01	2.A.03	-3	" " "	0038
		07	01	2.A.03	-4	" " "	0038
		07	01	2.A.03	-5	" " "	0038
		07	01	2.A.03	-6	" " "	0038
		07	01	2.A.04	-1	TV Camera Fault Identifier	0689
		07	01	2.A.06	-1	Gas Temperature Chamber Fault Identifier	0101
		07	01	2.A.07	-1	Ion Trap Fault Identifier	0102
		07	01	2.A.08	-1	Probe Fault Identifier	0103
		07	01	2.A.08	-2	" " "	0103
		07	01	2.A.09	-1	Magnetometer Fault Identifier	0104
		07	01	2.A.09	-2	" " "	0104
		07	01	2.A.10	-1	VLF Sensor Fault Identifier	0105
		07	01	4.C.02	-1	Electronic Equipment Fault Identifier	0795
		07	01	4.C.02	-2	Electronic Equipment Fault Identifier	0795
		07	01	4.C.02	-3	Electronic Equipment Fault Identifier	0795

FLIGHT EXPERIMENT TASK-SKILLS

SERIES P-1

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DISCIPLINE: Physics

FPE/SUBGROUP: P-1 - Space Physics Research Laboratory

EXPERIMENT:

MISSION MODE: B

1.0 Atmospheric and Magnetospheric Science (Including Aurora)

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
79	.4 Calibrate instruments as required	08	01	2.A.03	-1	Spectrometer Calibrator	0072
		08	01	2.A.03	-2	" "	0072
		08	01	2.A.03	-3	" "	0072
		08	01	2.A.03	-4	" "	0072
		08	01	2.A.03	-5	" "	0072
		08	01	2.A.03	-6	" "	0072
		08	01	2.A.06	-1	Gas Temperature Chamber Calibrator	0087
		08	01	2.A.07	-1	Ion Trap Calibrator	0088
		08	01	2.A.08	-1	Probe Calibrator	0089
		08	01	2.A.08	-2	" "	0089
		08	01	2.A.09	-1	Magnetometer Calibrator	0090
		08	01	2.A.10	-1	VLF Sensor Calibrator	0091
		08	01	2.A.11	-2	Particle Sensor Calibrator	0092
		08	01	4.C.01	-1	Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072
		08	01	2.A.02	-1	Photometer Calibrator	0086
79	.5 Clean and/or decontaminate instrument optics	19	01	4.D.06		Optical Equipment Cleaner	0093
		19	01	2.A.02	-1	Photometer Optics Cleaner	0094
		19	01	2.A.03	-1	Spectrometer Optics Cleaner	0095
		19	01	2.A.03	-2	" " "	0095
		19	01	2.A.03	-3	" " "	0095
		19	01	2.A.04	-1	TV Camera Optics Cleaner	0096
		19	01	4.D.04		Camera Lens Cleaner	0097
79	.6 Replace defective/malfunctioning modules in struments	26	01	2.A.02	-1	Photometer Module Remover	0107
		27	01	2.A.02	-1	Photometer Module Installer	0108
		26	01	2.A.03	-1	Spectrometer Module Remover	0109
		27	01	2.A.03	-1	Spectrometer Module Installer	0110

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-1.0-10-5
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
79	.6 (Continued)	26	01	2.A.03	-2	Spectrometer Module Remover	0109
		27	01	2.A.03	-2	Spectrometer Module Installer	0110
		26	01	2.A.03	-3	Spectrometer Module Remover	0109
		27	01	2.A.03	-3	Spectrometer Module Installer	0110
		26	01	2.A.04	-1	TV Camera Module Remover	0111
		27	01	2.A.04	-1	TV Camera Module Installer	0112
		26	01	2.A.03	-4	Spectrometer Module Remover	0109
		27	01	2.A.03	-4	Spectrometer Module Installer	0110
		26	01	2.A.03	-5	Spectrometer Module Remover	0109
		27	01	2.A.03	-5	Spectrometer Module Installer	0110
		26	01	2.A.03	-6	Spectrometer Module Remover	0109
		27	01	2.A.03	-6	Spectrometer Module Installer	0110
		26	01	2.A.06	-1	Gas Temperature Chamber Module Remover	0113
		27	01	2.A.06	-1	Gas Temperature Chamber Module Installer	0114
		26	01	2.A.07	-1	Ion Trap Module Remover	0115
		27	01	2.A.07	-1	Ion Trap Module Installer	0116
		26	01	2.A.08	-1	Probe Module Remover	0117
		27	01	2.A.08	-1	Probe Module Installer	0118
		26	01	2.A.08	-2	Probe Module Remover	0117
		27	01	2.A.08	-2	Probe Module Installer	0118
		26	01	2.A.09	-1	Magnetometer Module Remover	0119
		27	01	2.A.09	-1	Magnetometer Module Installer	0120
		26	01	2.A.10	-1	VLF Sensor Module Remover	0121
		27	01	2.A.10	-1	VLF Sensor Module Installer	0122
		26	01	2.A.11	-2	Particle Sensor Module Remover	0123
		27	01	2.A.11	-2	Particle Sensor Module Installer	0124

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
						PAGE B-1.0-10-6	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 1.0 Atmospheric and Magnetospheric Science (Including Aurora)						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
79	.7 Repair defective/malfunctioning instruments	28	01	2.A.02	-1	Photometer Repairer	1857
		28	01	2.A.04	-1	TV Camera Repairer	0690
		28	01	2.A.03	-1	Spectrometer Repairer	0779
		28	01	2.A.03	-2	" "	0779
		28	01	2.A.03	-3	" "	0779
		28	01	2.A.03	-4	" "	0779
		28	01	2.A.03	-5	" "	0779
		28	01	2.A.03	-6	" "	0779
		28	01	2.A.06	-1	Gas Temperature Chamber Repairer	0100
		28	01	2.A.07	-1	Ion Trap Repairer	0185
		28	01	2.A.08	-1	Probe Repairer	0099
		28	01	2.A.08	-2	" "	0099
		28	01	2.A.09	-1	Magnetometer Repairer	0098
		28	01	2.A.10	-1	VLF Sensor Repairer	0018
		28	01	2.A.11	-1	Particle Sensor Repairer	0016
		28	01	2.A.11	-2	" " "	0016

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-1 Space Physics Research Laboratory

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

2.0 Cometary Physics - Gaseous Release of NH_3
and ICN^{16}

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-2.0-04-1		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
4	Set up gas release device:								
4	.1 Remove NH ₃ release canister from storage area	18	01	1.A.03	-2	Gas Canister Unstower		0125	
		18	01	2.D.01	-1	" " "		0125	
		18	05	4.E.01		" " "		0125	
4	.2 Carry NH ₃ release canister to appropriate airlock	22	01	2.D.01	-1	Gas Canister Translocator		0126	
		22	01	1.A.01	-1	" " "		0126	
		22	01	5.A.01		" " "		0126	
		22	01	4.E.01		" " "		0126	
		22	01	1.A.01	-2	" " "		0126	
4	.3 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor		0009	
4	.4 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener		0010	
4	.5 Select appropriate control cables	13	01	2.E.01		Gas Canister Cable Selector		0127	
		13	01	3.D.01	-1	" " " "		0127	
		13	01	2.D.01	-2	" " " "		0127	
4	.6 Route canister control cables through airlock feedthrough	27	01	1.A.01	-4	Gas Canister Cable Router		0128	
		27	01	2.E.01	-1	" " " "		0128	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-2.0-04-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	.7 Connect cabling to gas canister	27	05	4.E.01		Gas Canister Control Cable Connector	0129
		27	01	2.D.01	-1	Gas Canister Control Cable Connector	0129
		27	01	2.E.01	-1	Gas Canister Control Cable Connector	0129
		27	01	2.D.01	-2	Gas Canister Control Cable Connector	0129
4	.8 Close airlock inside hatch	27	01	1.A.01	-3	Airlock Inside Hatch Closer	0031
4	.9 Evacuate airlock to space	15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
4	.10 Open airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033
4	.11 Move gas canister assembly and extendable rails to outside	15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
4	.12 Remove ICN ¹⁶ release canister from storage area	18	01	2.D.01	-2	Gas Canister Unstower	0125
		18	05	4.E.01		" " "	0125
4	.13 Carry ICN ¹⁶ release canister to appropriate airlock	22	01	1.A.01	-1	Gas Canister Translocator	0126
		22	01	5.A.01		" " "	0126

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1	
							PAGE	B-2.0-04-3	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
4	.13 (Continued)	22	05	4.E.01		Gas Canister Translocator		0126	
		22	01	2.D.01	-2	" "	"	0126	
		22	01	1.A.01	-2	" "	"	0126	
4	.14 Mount gas release canister on extendable rails of airlock	27	01	2.D.01	-1	Gas Canister Installer		0130	
		27	01	2.D.01	-2	" "	"	0130	
		27	01	1.A.01	-5	" "	"	0130	
		27	05	4.E.01		" "	"	0130	
5	Set up spectrometers:								
5	.1 Remove spectrometer from storage area	18	01	2.A.03	-2	Spectrometer Unstower		0007	
5	.2 Carry spectrometer to appropriate airlock	22	01	1.A.01	-1	Spectrometer Translocator		0008	
		22	01	5.A.01		" "	"	0008	
		22	01	1.A.01	-2	" "	"	0008	
5	.3 Mount spectrometer on extendable rails of airlock	27	01	2.A.03	-2	Spectrometer Installer		0006	
		27	01	1.A.01	-5	" "	"	0006	
5	.4 Select appropriate cabling for spectrometer	13	01	2.E.01		Spectrometer Cable Selector		0028	
		13	01	2.A.03	-2	" "	"	0028	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-2.0-04-4	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
5	.5 Route spectrometer cables through airlock feedthroughs	27	01	1.A.01	-4	Spectrometer Cable Router	0029	
		27	01	2.E.01		" " "	0029	
5	.6 Connect cabling to spectrometer	27	01	2.A.03	-2	Spectrometer Cable Connector	0030	
		27	01	2.E.01		" " "	0030	
5	.7 Move instrument assembly and extendable rails to outside	15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034	
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138	
6	Calibrate spectrometers:							
6	.1 Activate instrument power	15	01	2.B.02	-2	Instrument Power Actuator	0035	
		01	01	2.B.02	-2	Instrument Power Monitor	0139	
6	.2 Set spectrometer controls to proper settings on control panel	15	01	2.B.02	-3	Spectrometer Control Actuator	0036	
6	.3 Monitor displays for proper operation of spectrometer	01	01	2.B.02	-3	Spectrometer Operating Status Monitor	0037	
6	.4 Determine that spectrometer is operating properly	11	01	2.A.03	-2	Spectrometer Operation Evaluator	0879	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-2.0-04-5		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
6	.5 Place calibration lamps in front of spectrometer apertures (inside)	27	01	4.C.01	-1	Calibration Equipment Installer	0071		
		27	01	2.A.03	-1	" " "	0071		
6	.6 Move calibration lamps in front of spectrometer apertures (outside)	15	01	2.B.02	-3	Spectrometer Control Actuator	0036		
6	.7 Calibrate spectrometer, in situ	08	01	2.A.03	-2	Spectrometer Calibrator	0072		
		08	01	4.C.01	-1	" "	0072		
		08	01	2.B.02	-3	" "	0072		
27	Change spectrometer gratings	26	01	2.A.03	-2	Spectrometer Grating Remover	0043		
		27	01	2.A.03	-2	Spectrometer Grating Installer	0044		
36	Mount gaseous release devices on spacecraft exterior surface	22	02	1.A.01	-1	Gas Canister Translocator	0126		
		22	02	5.A.01		" " "	0126		
		22	02	2.D.01	-1	" " "	0126		
		22	02	2.D.01	-2	" " "	0126		
		27	02	1.A.01	-6	Gas Canister Installer	0130		
		27	02	2.D.01	-1	" " "	0130		
		27	02	1.A.01	-8	" " "	0130		
		27	02	2.D.01	-2	" " "	0130		
		27	02	5.H		" " "	0130		
		22	02	5.H		Gas Canister Translocator	0126		
		22	02	4.E.02		" " "	0126		
		27	02	4.E.02		Gas Canister Installer	0130		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-2.0-05-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
15	Store sensors within spacecraft	17	01	2.A.03	-2	Spectrometer Stower	0063
38	Retrieve instruments and gas release devices:						
38	.1 Retract instrument assembly or gas release canister assembly and extendable rails inside airlock	15 01	01 01	1.A.02 1.A.02	-4 -5	Rail/Boom Retraction Actuator Rail/Boom Position Monitor	0131 0138
38	.2 Close airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Closer	0132
38	.3 Pressurize airlock	15	01	1.A.02	-2	Airlock Pressurization Actuator	0133
38	.4 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0009
38	.5 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
38	.6 Remove cables from spectrometer	26 26	01 01	2.A.03 2.E.01	-2	Spectrometer Cable Disconnecter " " "	0134 0134
38	.7 Remove cables from gas release canisters (used)	26 26 26	01 01 01	2.D.01 2.E.01 2.D.01	-1 -2	Gas Canister Cable Disconnecter " " " " " " " "	0135 0135 0135

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-2.0-05-2		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B		
							BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
38	.8 Remove cables from gas release canisters (unused)	26	05	4.E.01		Gas Canister Cable Disconnecter		0135	
		26	01	2.D.01	-1	" " " "		0135	
		26	01	2.D.01	-2	" " " "		0135	
		26	01	2.E.01		" " " "		0135	
38	.9 Remove spectrometer from airlock extendable boom	26	01	2.A.03	-2	Spectrometer Remover		0315	
		26	01	1.A.01	-5	" "		0315	
38	.10 Remove used gas release canister from airlock extendable boom	26	01	2.D.01	-1	Gas Canister Remover		0136	
		26	01	2.D.01	-2	" " "		0136	
		26	01	2.E.01		" " "		0136	
		26	01	1.A.01	-5	" " "		0136	
38	.11 Remove unused gas release canister from airlock extendable boom	26	01	2.D.01	-1	Gas Canister Remover		0136	
		26	01	2.D.01	-2	" " "		0136	
		26	01	2.E.01		" " "		0136	
		26	05	4.E.01		" " "		0136	
		26	01	1.A.01	-5	" " "		0136	
38	.12 Recover gas release canisters from side of spacecraft exterior	25	02	1.A.01	-1	Spacecraft Exterior Translation		0061	
		25	02	5.A.01		" " "		0061	
		26	02	2.D.01	-1	Gas Canister Remover		0136	
		26	02	2.D.01	-2	" " "		0136	
		26	02	1.A.01	-6	" " "		0136	
		22	02	1.A.01	-1	Gas Canister Translocator		0126	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1
							PAGE	B-2.0-05-3
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B	
							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
38	.12 (Continued)	22	02	5.A.01		Gas Canister Translocator	0126	
		22	02	2.D.01	-1	" " "	0126	
		22	02	2.D.01	-2	" " "	0126	
		26	02	1.A.01	-8	Gas Canister Remover	0136	
		26	02	5.H		" " "	0136	
		26	02	4.E.02		" " "	0136	
		22	02	4.E.02		Gas Canister Translocator	0126	
		22	02	5.H		" " "	0126	
38	.13 Return spectrometer to storage area	22	01	1.A.01	-1	Spectrometer Translocator	0008	
		22	01	5.A.01		" "	0008	
		22	01	1.A.01	-2	" "	0008	
38	.14 Return unused gas release canisters to storage area	22	01	2.D.01	-1	Gas Canister Translocator	0126	
		22	01	2.D.01	-2	" " "	0126	
		22	01	1.A.01	-1	" " "	0126	
		22	01	5.A.01		" " "	0126	
		22	05	4.E.01		" " "	0126	
		22	01	1.A.01	-2	" " "	0126	
38	.15 Carry used gas canisters to discard area or decontamination area	22	01	1.A.01	-1	Gas Canister Translocator	0126	
		22	01	5.A.01		" " "	0126	
		22	01	1.A.01	-2	" " "	0126	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1
							PAGE	B-2.0-09-1
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B	
							BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
13	Maintain experiments within space-craft:							
13	.1 Change spectrometer gratings	26	01	2.A.03	-2	Spectrometer Grating Remover	0043	
		27	01	2.A.03	-2	Spectrometer Grating Installer	0044	
13	.2 Examine optical elements of spectrometers for contamination and deterioration	03	01	2.A.03	-2	Spectrometer Optics Inspector	0073	
13	.3 Examine mechanical elements of spectrometers for contamination, deterioration, wear and damage	03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078	
13	.5 Calibrate spectrometers, as scheduled	08	01	2.A.03	-2	Spectrometer Calibrator	0072	
		08	01	4.C.01	-1	" "	0072	
13	.6 Clean and/or decontaminate spectrometer optics	19	01	2.A.03	-2	Spectrometer Optics Cleaner	0095	
		19	01	4.D.06		" " "	0095	
13	.9 Place calibration lamps in front of spectrometer apertures	27	01	4.C.01	-1	Calibration Equipment Installer	0071	
		27	01	2.A.03	-2	" " "	0071	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
DISCIPLINE: Physics						PAGE B-2.0-10-1	
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶						MISSION MODE: B	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Maintain experiments within spacecraft						
13	.1 Change spectrometer gratings	26 27	01 01	2.A.03 2.A.03	-2 -2	Spectrometer Grating Remover Spectrometer Grating Installer	0043 0044
13	.2 Examine optical elements of spectrometers for contamination and deterioration	03	01	2.A.03	-2	Spectrometer Optics Inspector	0073
13	.3 Examine mechanical elements of spectrometers for contamination, deterioration, wear, and damage	03	01	2.A.03	-2	Spectrometer Assembly Inspector	0078
13	.4 Fault isolate spectrometers to identify causes of malfunctions	07 07 07 07	01 01 01 01	2.A.03 4.C.02 4.C.02 4.C.02	-2 -1 -2 -3	Spectrometer Fault Identifier Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier	0038 0795 0795 0795
13	.5 Calibrate spectrometers as required	08 08	01 01	2.A.03 4.C.01	-2 -1	Spectrometer Calibrator " "	0072 0072
13	.6 Clean and/or decontaminate spectrometer optics	19 19	01 01	2.A.03 4.D.06	-2	Spectrometer Optics Cleaner " " "	0095 0095

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-2.0-10-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 2.0 Cometary Physics - Gaseous Release of NH ₃ and ICN ¹⁶							MISSION MODE: B	
							BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
13	.7 Replace defective/malfunctioning modules in instruments	26	01	2.A.03	-2	Spectrometer Module Remover		0109
		27	01	2.A.03	-2	Spectrometer Module Installer		0110
13	.8 Repair defective/malfunctioning modules in spectrometers	28	01	2.A.03	-2	Spectrometer Repairer		0779
13	.9 Place calibration lamps in front of spectrometer apertures	27	01	4.C.01	-1	Calibration Equipment Installer		0071
		27	01	2.A.03	-2	" " "		0071

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-1 Space Physics Research Laboratory

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

3.0 Meteoroid Science

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-3.0-04-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science							MISSION MODE: B	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
4	Manually deploy hinged, preloaded recovery panels in external space environment:							
4	.1 Remove panel package from storage	18	01	2.A.11	-3	Particle Sensor Unstower		0060
4	.2 Carry panel package to appropriate airlock	22	01	1.A.01	-1	Particle Sensor Translocator		0020
		22	01	1.A.01	-2	"	"	0020
		22	01	5.A.01		"	"	0020
		22	01	2.A.11	-3	"	"	0020
4	.3 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor		0009
4	.4 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener		0010
4	.5 Carry panel package into EVA airlock	22	03	1.A.01	-1	Particle Sensor Translocator		0020
		22	03	1.A.01	-10	"	"	0020
		22	03	4.E.02		"	"	0020
		22	03	2.A.11	-3	"	"	0020

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-3.0-04-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	.6 Close airlock inside hatch	27	01	1.A.01	-3	Airlock Inside Hatch Closer	0031
4	.7 Evacuate airlock to space	15 01	01 01	1.A.02 1.A.02	-2 -2	Airlock Depressurization Actuator Airlock Status Monitor	0032
4	.8 Open airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033
4	.9 Mount panel package on space- craft exterior surface	22 22 27 27 22 22 22 27 27 27	02 01 02 02 02 02 02 02 02 02	1.A.01 5.A.01 1.A.01 2.A.11 2.A.11 5.H 4.E.02 4.E.02 5.H 1.A.02	-1 -6 -3 -3 -8	Particle Sensor Translocator " " " Particle Sensor Installer " " " Particle Sensor Translocator " " " " " " Particle Sensor Installer " " " " " "	0020 0020 0140 0140 0020 0020 0020 0140 0140 0140
4	.10 Extend hinged panels to deployed configuration	23 23	02 02	2.A.11 5.A.01	-3	Particle Sensor Deployer " " "	0141 0141

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-3.0-04-3
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	.10 (Continued)	23	02	5.H	-6	Particle Sensor Deployer	0141
		23	02	4.E.02		" " "	0141
		23	02	1.A.01		" " "	0141
4	.11 Return to EVA airlock	25	02	1.A.01	-1	Spacecraft Exterior Translationer	0061
		25	02	5.A.01		" " "	0061
		25	02	5.H		" " "	0061
		25	02	4.E.02		" " "	0061
4	.12 Enter EVA airlock	25	02	1.A.01	-1	Spacecraft Airlock Translationer	0142
		25	02	5.A.01		" " "	0142
		25	02	1.A.01	-10	" " "	0142
		25	02	5.H		" " "	0142
		25	02	4.E.02		" " "	0142
4	.13 Close airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Closer	0132
		01	01	1.A.02	-1	Airlock Status Monitor	0009
4	.14 Pressurize airlock	15	01	1.A.02	-2	Airlock Pressurization Actuator	0133
		01	01	1.A.02	-2	Airlock Status Monitor	0009
10	Mount cosmic dust analyzer target plate and associated grids and electronics on spacecraft exterior						

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-3.0-04-4	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science							MISSION MODE: B	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
10	.1 Remove CDA package from storage	18	01	2.A.11	-4	Particle Sensor Unstower	0060	
		18	01	1.A.03	-1	" " "	0060	
10	.2 Carry CDA assembly to appropriate airlock	22	01	1.A.01	-1	Particle Sensor Translocator	0020	
		22	01	5.A.01		" " "	0020	
		22	01	1.A.01	-2	" " "	0020	
		22	01	2.A.11	-4	" " "	0020	
10	.3 Mount CDA assembly on spacecraft exterior surface	22	02	1.A.01	-1	Particle Sensor Translocator	0020	
		22	02	5.A.01		" " "	0020	
		27	02	1.A.01	-6	Particle Sensor Installer	0140	
		22	02	2.A.11	-4	Particle Sensor Translocator	0020	
		22	02	5.H		" " "	0020	
		22	02	4.E.02		" " "	0020	
		27	02	1.A.01	-8	Particle Sensor Installer	0140	
		27	02	5.H		" " "	0140	
		27	02	4.E.02		" " "	0140	
11	Deploy CDA ion collector on extendable boom:							
11	.1 Remove ion collector from storage	18	01	2.A.11	-5	Particle Sensor Unstower	0060	
		18	01	1.A.03	-1	" " "	0060	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
DISCIPLINE: Physics						PAGE	B-3.0-04-5
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
11	.2 Select appropriate cabling for ion collector	13	01	2.E.01		Particle Sensor Cable Selector	0143
		13	01	2.A.11	-5	" " " "	0143
11	.3 Route ion collector cables through airlock feedthrough	27	01	1.A.01	-4	Particle Sensor Cable Router	0144
		27	01	2.E.01		" " " "	0144
11	.4 Mount ion collector on airlock extendable boom	27	01	2.A.11	-5	Particle Sensor Installer	0140
		27	01	1.A.01	-5	" " "	0140
11	.5 Connect cabling to ion collector	27	01	2.A.11	-5	Particle Sensor Cable Connector	0145
		27	01	2.E.01		" " " "	0145
11	.6 Move ion collector and extendable boom to outside	15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
11	.7 Align ion collector with CDA target grid	09	01	1.A.02	-4	Particle Sensor Aligner	0146
		09	01	1.A.02	-5	" " "	0146
		09	01	2.A.11	-5	" " "	0146
		09	01	2.A.11	-4	" " "	0146

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-3.0-04-6	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science							MISSION MODE: B	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
13	Change film cartridge in trace recording camera	26	01	4.D.04	-1	Film Cartridge Remover	0045	
		26	01	4.D.04	-2	" " "	0045	
		27	01	4.D.04	-1	Film Cartridge Installer	0046	
		27	01	4.D.04	-2	" " "	0046	
19	Align/calibrate optical subsystems of optical detection meteoroid expt. (ODME) using stars	09	01	2.A.11	-6	Particle Sensor Optics Calibrator	0147	
		09	01	3.B		Particle Sensor Optics Calibrator	0147	
27	Deploy instruments:							
27	.1 Remove CDA oscilloscope from storage area	18	01	2.B.02	-1	Oscilloscope Unstower	0148	
		18	01	1.A.03	-1	" "	0148	
27	.2 Mount CDA oscilloscope inside spacecraft	27	01	2.B.02	-1	Oscilloscope Installer	0149	
		27	01	1.A.01	-7	" "	0149	
27	.3 Mount trace recording camera on CDA oscilloscope	27	01	2.B.02	-1	Camera Installer	0039	
		27	01	4.D.04	-2	" "	0039	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
						PAGE	B-3.0-04-7
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
27	.4 Remove small meteoroid mass and velocity sensor arrays from storage	18	01	2.A.11	-7	Particle Sensor Unstower	0060
		18	01	1.A.03	-1	" " "	0060
27	.5 Select appropriate cabling for small meteoroid sensor arrays	13	01	2.E.01	-7	Particle Sensor Cable Selector	0143
		13	01	2.A.11		" " " "	0143
27	.6 Mount small meteoroid sensor arrays on airlock extendable boom	27	01	2.A.11	07	Particle Sensor Installer	0140
		27	01	1.A.01	-5	" " "	0140
27	.7 Connect cabling to small meteoroid sensor arrays	27	01	2.A.11	-7	Particle Sensor Cable Connector	0145
		27	01	2.E.01		" " " "	0145
27	.8 Mount small meteoroid sensor arrays on spacecraft exterior surface	22	02	1.A.01	-1	Particle Sensor Translocator	0020
		22	02	5.A.01	-8	" " "	0020
		27	02	1.A.01		Particle Sensor Installer	0140
		27	02	2.A.11		" " "	0140
		22	02	2.A.11		Particle Sensor Translocator	0020
		22	02	5.H	-6	" " "	0020
		22	02	4.E.02		" " "	0020
		27	02	1.A.01		Particle Sensor Installer	0140
		27	02	5.H		" " "	0140
		27	02	4.E.02		" " "	0140
27	.9 Deploy thick material meteoroid penetration device (TMMPD)	23	01	2.A.11	-8	Particle Sensor Deployer	0141
		23	02	2.A.11	-8	" " "	0141

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-3.0-05-1
DISCIPLINE: Physics		FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT: 3.0 Meteoroid Science							MISSION MODE: B
BASIC FUNCTION: 05 Experiment Shutdown							
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Prepare and package samples and specimen for return to Earth	17	01	2.A.11	-3	Particle Sensor Stower	0070
		17	01	2.A.11	-7	" " "	0070
		17	01	1.A.03	-1	" " "	0070
7	Fold hinged recovery panels when mission is complete	24	02	2.A.11	-3	Particle Sensor Retractor	0150
		24	02	5.A.01		" " "	0150
		24	02	4.E.02		" " "	0150
		24	02	1.A.01	-1	" " "	0150
		24	02	1.A.01	-6	" " "	0150
		24	02	5.H		" " "	0150
8	Retrieve experiment equipment:						
8	.1 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0009
8	.2 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
8	.3 Enter EVA airlock	25	03	1.A.01	-10	Airlock Translationer	0142
		25	03	4.E.02		" "	0142
		25	03	1.A.01	-1	" "	0142

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-3.0-05-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:							MISSION MODE: B	
3.0 Meteoroid Science							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
8	.4 Close airlock inside hatch	27	01	1.A.01	-3	Airlock Inside Hatch Closer		0031
8	.5 Evacuate airlock to space	15 01	01 01	1.A.02 1.A.02	-2 -2	Airlock Depressurization Actuator Airlock Status Monitor		0032 0009
8	.6 Open airlock outside gate	15 01	01 01	1.A.02 1.A.02	-3 -3	Airlock Outside Hatch Opener Airlock Status Monitor		0033 0009
8	.7 Egress from EVA airlock to space	25 25 25 25	02 02 02 02	1.A.01 4.E.02 1.A.01 5.H	-10 -1	Spacecraft Airlock Translationer " " " " " " " " "		0142 0142 0142 0142
8	.8 Move to site of equipment to be recovered	25 25 25 25	02 02 02 02	1.A.01 5.A.01 4.E.02 5.H	-1	Spacecraft Exterior Translationer " " " " " " " " "		0061 0061 0061 0061
8	.9 Remove experiment equipment from mounting on spacecraft exterior	26 26 26 26 26 26	02 02 02 02 02 02	1.A.01 4.E.02 2.A.11 5.H 2.A.11 2.A.11	-6 -3 -4 -8	Particle Sensor Remover " " " " " " " " " " " " " " "		0017 0017 0017 0017 0017 0017

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-3.0-05-3		
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT:							MISSION MODE: B		
3.0 Meteoroid Science							BASIC FUNCTION: 05 Experiment Shutdown		
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
8	.9 (Continued)	26	02	2.A.11	-7	Particle Sensor Remover			0017
		26	02	1.A.01	-8	" " "			0017
8	.10 Carry experiment equipment to airlock	22	02	1.A.01	-1	Particle Sensor Translocator			0020
		22	02	5.A.01		" " "			0020
		22	02	4.E.02		" " "			0020
		22	02	2.A.11	-3	" " "			0020
		22	02	2.A.11	-4	" " "			0020
		22	02	2.A.11	-7	" " "			0020
		22	02	5.H		" " "			0020
8	.11 Enter EVA airlock with recovered experiment equipment	22	02	1.A.01	-1	Particle Sensor Translocator			0020
		22	02	5.A.01		" " "			0020
		22	02	4.E.02		" " "			0020
		22	02	2.A.11	-3	" " "			0020
		22	02	2.A.11	-4	" " "			0020
		22	02	2.A.11	-7	" " "			0020
		22	02	1.A.01	-10	" " "			0020
8	.12 Close airlock outside hatch	15	01	1.A.02	-3	Airlock Outside Hatch Closer			0132
		01	01	1.A.02	-1	Airlock Status Monitor			0009
8	.13 Pressurize EVA airlock	15	01	1.A.02	-2	Airlock Pressurization Actuator			0133
		01	01	1.A.02	-2	Airlock Status Monitor			0009

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-3.0-05-4
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
8	.14 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0009
8	.15 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
8	.16 Exit from EVA airlock into spacecraft	26	03	1.A.01	-1	Spacecraft Airlock Translationer	0142
		25	03	4.E.02		" " "	0142
		25	03	1.A.01	-10	" " "	0142
8	.17 Remove recovered equipment from EVA airlock	22	01	2.A.11	-7	Particle Sensor Translocator	0020
		22	01	2.A.11	-3	" " "	0020
		22	01	2.A.11	-4	" " "	0020
		22	01	5.A.01		" " "	0020
		22	01	1.A.01	-10	" " "	0020
		22	01	1.A.01	-1	" " "	0020
		22	01	1.A.01	-2	" " "	0020
8	.18 Remove experiment equipment from extendable boom	26	01	2.A.11	-5	Particle Sensor Remover	0017
		26	01	2.A.11	-7	" " "	0017
		26	01	2.A.11	-6	" " "	0017
		26	01	1.A.01	-5	" " "	0017
		26	01	1.A.01	-6	" " "	0017
8	.19 Retract sensors and extendable boom into airlock	15	01	1.A.02	-4	Rail/Boom Retraction Actuator	0131

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
DISCIPLINE: Physics						PAGE	B-3.0-05-5
EXPERIMENT: 3.0 Meteoroid Science						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Stow recovery panel package for return to Earth	22	01	2.A.11	-3	Particle Sensor Translocator	0020
		22	01	1.A.01	-1	" " "	0020
		22	01	5.A.01		" " "	0020
		17	01	2.A.11	-3	Particle Sensor Stower	0070
		17	01	1.A.03	-1	" " "	0070
		22	01	1.A.01	-2	Particle Sensor Translocator	0020
14	Package exposed film for return to Earth	17	01	4.D.04	-1	Film Cartridge Stower	0151
		17	01	1.A.03	-3	" " "	0151
17	Package small meteoroid mass/velocity experiment residual material for return to Earth	17	01	2.A.11	-7	Particle Sensor Stower	0070
		17	01	1.A.03	-1	" " "	0070
39	Store sensors within spacecraft	22	01	1.A.01	-2	Particle Sensor Translocator	0020
		22	01	1.A.01	-1	" " "	0020
		22	01	5.A.01		" " "	0020
		17	01	2.A.11	-3	Particle Sensor Stower	0070
		17	01	2.A.11	-4	" " "	0070
		17	01	2.A.11	-5	" " "	0070
		17	01	2.A.11	-6	" " "	0070
		17	01	2.A.11	-7	" " "	0070
		17	01	2.E.01		Cable Stower	0152
		17	01	2.B.04	-1	Oscilloscope Stower	0153
		17	01	4.D.04	-2	Camera Stower	0154
		17	01	1.A.03	-1	Particle Sensor Stower	0070

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-3.0-09-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 3.0 Meteoroid Science							MISSION MODE: B	
							BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
19	Align/calibrate optical systems of optical detection meteoroid expt. (ODME) using stars	09 09	01 01	2.A.11 3.B	-6	Particle Sensor Optics Calibrator	0147	0147
29	Examine optical elements for contamination and deterioration	03 03	01 01	4.D.04 2.A.11	-2 -6	Particle Sensor Optics Inspector	0155	0155
32	Perform maintenance functions:							
32	.1 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03 03 03 03	01 01 01 01	2.A.11 2.A.11 2.A.11 2.A.11	-4 -5 -6 -7	Particle Sensor Assembly Inspector	0085	0085
32	.3 Clean and/or decontaminate instrument optics	19 19 19	01 01 01	4.D.04 2.A.11 4.D.06	-2 -6	Camera Lens Cleaner Particle Sensor Optics Cleaner Optical Equipment Cleaner	0097 0156 0093	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-3.0-10-1		
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory					
EXPERIMENT:							MISSION MODE: B		
3.0 Meteoroid Science							BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE		NO.	
19	Align/calibrate optical systems of optical detection meteoroid expt. (ODME) using stars	09 09	01 01	2.A.11 3.B	-6	Particle Sensor Optics Calibrator			0147 0147
29	Examine optical elements for contamination and deterioration	03 03	01 01	4.D.04 2.A.11	-2 -6	Particle Sensor Optics Inspector			0155 0155
32	Perform maintenance functions:								
32	.1 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03 03 03 03	01 01 01 01	2.A.11 2.A.11 2.A.11 2.A.11	-4 -5 -6 -7	Particle Sensor Assembly Inspector			0085 0085 0085 0085
32	.2 Fault isolate electrical and electronic instruments to identify causes of malfunctions	07 07 07 07 07 07 07 07 07 07	01 01 01 01 01 01 01 01 01 01	4.C.02 4.C.02 4.C.02 2.A.11 2.A.11 2.A.11 2.A.11 2.A.11 2.A.11 2.B.02 4.D.04	-1 -2 -3 -4 -5 -7 -6 -8 -1 -2	Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier Particle Sensor Fault Identifier " " " " " " " " " " " " " " " " Oscilloscope Fault Identifier Camera Fault Identifier			0795 0795 0795 0157 0157 0157 0157 0157 0048 0886

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1	
							PAGE	B-3.0-10-2	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 3.0 Meteoroid Science			MISSION MODE: B						
							BASIC FUNCTION: 10 Unscheduled Maintenance		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
32	.3 Clean and/or decontaminate instruments optics	19	01	4.D.04	-2	Camera Lens Cleaner	0097		
		19	01	2.A.11	-6	Particle Sensor Optics Cleaner	0156		
		19	01	4.D.06		Optical Equipment Cleaner	0093		
32	.4 Replace defective/malfunctioning modules in instruments	26	01	2.A.11	-4	Particle Sensor Module Remover	0123		
		26	01	2.A.11	-5	" " " "	0123		
		26	01	2.A.11	-6	" " " "	0123		
		26	01	2.A.11	-7	" " " "	0123		
		26	01	4.D.04	-2	Camera Module Remover	0158		
		26	01	2.B.02	-1	Oscilloscope Module Remover	0159		
		27	01	2.A.11	-4	Particle Sensor Module Installer	0124		
		27	01	2.A.11	-5	" " " "	0124		
		27	01	2.A.11	-6	" " " "	0124		
		27	01	2.A.11	-7	" " " "	0124		
		27	01	4.D.04	-2	Camera Module Installer	0160		
		27	01	2.B.02	-1	Oscilloscope Module Installer	0161		
		32	.5 Repair defective/malfunctioning modules in instruments	28	01	2.A.11	-4	Particle Sensor Repairer	0016
28	01			2.A.11	-5	" " " "	0016		
28	01			2.A.11	-6	" " " "	0016		
28	01			2.A.11	-7	" " " "	0016		
28	01			2.A.11	-8	" " " "	0016		
28	01			4.D.04	-2	Camera Repairer	1195		
28	01			2.B.02	-1	Oscilloscope Repairer	0047		

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DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-1 Space Physics Research Laboratory

MISSION MODE: B - Shuttle-Serviced Free Flyer, extended duration

EXPERIMENT:

4.0 Small Astronomy Telescopes

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1	
							PAGE	B-4.0-04-1	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT: 4.0 Small Astronomy Telescopes							MISSION MODE: B		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL			
NO.	DESCRIPTION					TITLE	NO.		
1	Change gratings on U.V. Telescope scanning grating spectrometer	26 27	01 01	2.A.03 2.A.03	-2 -2	Spectrometer Grating Remover Spectrometer Grating Installer	0043 0044		
4	Deploy U.V. telescope scanning grating spectrometer:								
4	.1 Remove telescope protective cover and lens caps	26 26 26	01 01 01	2.A.01 4.D.01 4.D.01	-2 -3 -4	Telescope Cover Remover " " " " " "	0002 0002 0002		
4	.2 Release telescope launch restraints	26 26	01 01	2.A.01 4.D.02	-2 -2	Launch Restraint Remover " " "	0003 0003		
4	.3 Close airlock inside hatch	27 01	01 01	1.A.01 1.A.02	-3 -1	Airlock Inside Hatch Closer Airlock Status Monitor	0031 0009		
4	.4 Evacuate airlock to space	15 01	01 01	1.A.02 1.A.02	-2 -2	Airlock Depressurization Actuator Airlock Status Monitor	0032 0009		
4	.5 Open airlock outside gate	15 01	01 01	1.A.02 1.A.02	-3 -2	Airlock Outside Hatch Opener Airlock Status Monitor	0033 0009		
4	.6 Move telescope-spectrometer assembly and extendable rails to outside	15 01	01 01	1.A.02 1.A.02	-4 -5	Rail/Boom Extension Actuator Rail/Boom Position Monitor	0034 0138		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-4.0-04-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 4.0 Small Astronomy Telescopes						MISSION MODE: B	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	.7 Extend light baffles on telescope	15	01	2.B.02	-6	Telescope Baffle Deployment Actuator	0162
		01	01	2.B.02	-6	Telescope Baffle Status Monitor	0163
10	Remove Space Image Tube Optical System (SITOS) from storage	18	01	2.A.05	-1	SITOS Unstower	0164
		18	01	1.A.03	-1	" "	0164
11	Mount Space Image Tube Optical System in appropriate airlock:						
11	.1 Carry SITOS to appropriate airlock	22	01	1.A.01	-2	SITOS Translocator	0165
		22	01	1.A.01	-1	" "	0165
		22	01	5.A.01		" "	0165
		22	01	2.A.05	-1	" "	0165
11	.2 Mount SITOS on mounting surface of telescope-spectrometer in airlock	27	01	2.A.05	-1	SITOS Installer	0166
		27	01	2.A.01	-2	" "	0166
		27	01	1.A.01	-6	" "	0166
13	Checkout SITOS instrument for proper operation	14	01	2.A.05	-1	SITOS Tester	0167
		14	01	2.B.02	-7	" "	0167
		01	01	2.B.02	-7	" "	0167
14	Calibrate SITOS	08	01	2.A.05	-1	SITOS Calibrator	0168
		08	01	4.C.01		" "	0168

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-1
							PAGE	B-4.0-04-3
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 4.0 Small Astronomy Telescopes						MISSION MODE: B		
						BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
16	Change gratings on SITOS instrument	26	01	2.A.05	-1	SITOS Grating Remover	0169	
		27	01	2.A.05	-1	SITOS Grating Installer	0170	
29	Change film cartridges on SITOS photographic camera	26	01	4.D.04	-1	Film Cartirdge Remover	0045	
		26	01	4.D.04	-3	" " "	0045	
		27	01	4.D.04	-1	Film Cartridge Installer	0046	
		27	01	4.D.04	-2	" " "	0046	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-4.0-05-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 4.0 Small Astronomy Telescopes						MISSION MODE: B	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Collapse light baffles on telescope for storage	15	01	2.B.02	-6	Telescope Baffle Retraction Actuator	0171
		01	01	2.B.02	-6	Telescope Baffle Status Monitor	0163
36	Store sensors within spacecraft:						
36	.1 Retract telescope-spectrometer assembly and extendable rails into airlock.	15	01	1.A.02	-4	Rail/Boom Retraction Actuator	0131
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
36	.2 Close airlock outside gate	15	01	1.A.02	-3	Airlock Outside Hatch Closer	0132
		01	01	1.A.02	-1	Airlock Status Monitor	0009
36	.3 Pressurize airlock	15	01	1.A.02	-2	Airlock Pressurization Actuator	0133
		01	01	1.A.02	-2	Airlock Status Monitor	0009
36	.4 Ensure that airlock is secure	01	01	1.A.02	-1	Airlock Status Monitor	0009
36	.5 Open airlock inside hatch	26	01	1.A.01	-3	Airlock Inside Hatch Opener	0010
36	.6 Attach Telescope Restraints	27	01	2.A.01	-2	Launch Restraint Installer	0172
		27	01	4.D.02	-2	" " "	0172

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1	
							PAGE B-4.0-05-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT:							MISSION MODE: B	
4.0 Small Astronomy Telescopes							BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
36	.7 Remove SITOS from mounting pad on telescope-spectrometer	26	01	2.A.05	-1	SITOS Remover		0173
		26	01	2.A.01	-2	" "		0173
36	.8 Store SITOS in appropriate storage area	22	01	1.A.01	-2	SITOS Translocator		0165
		22	01	1.A.01	-1	" "		0165
		22	01	5.A.01		" "		0165
		17	01	2.A.05	-1	SITOS Stower		0174
		17	01	1.A.03	-1	" "		0174
		22	01	2.A.05	-1	SITOS Translocator		0165
36	.9 Install telescope protective caps and covers	27	01	2.A.01	-2	Telescope Cover Remover		0175
		27	01	4.D.01	-3	" " "		0175
		27	01	4.D.01	-4	" " "		0175

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1
							PAGE B-4.0-09-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 4.0 Small Astronomy Telescopes					MISSION MODE: B		
					BASIC FUNCTION: 09 Scheduled Maintenance		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Examine used gratings for contamination or deterioration	03 03	01 01	2.A.03 2.A.05	-2 -1	Spectrometer Grating Inspector SITOS Grating Inspector	0176 0177
13	Checkout SITOS instruments for proper operation	14 14 01	01 01 01	2.A.05 2.B.02 2.B.02	-1 -7 -7	SITOS Tester " " " "	0167 0167 0167
14	Calibrate SITOS instruments	08 08	01 01	2.A.05 4.C.01	-1	SITOS Calibrator " "	0168 0168
27	Change spectrometer gratings	26 27	01 01	2.A.03 2.A.03	-2 -2	Spectrometer Grating Remover Spectrometer Grating Installer	0043 0044
28	Examine optical elements for contamination and deterioration	03 03 03 03	01 01 01 01	2.A.01 2.A.03 2.A.05 4.D.04	-2 -2 -1 -3	Telescope Optics Inspector Spectrometer Optics Inspector SITOS Optics Inspector Camera Lens Inspector	0178 0073 0179 0074
31	Perform maintenance functions:						
31	.1 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03 03 03 03	01 01 01 01	2.A.01 2.A.03 2.A.05 4.D.04	-2 -2 -1 -3	Telescope Assembly Inspector Spectrometer Assembly Inspector SITOS Assembly Inspector Camera Assembly Inspector	0001 0078 0180 0181

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-1		
							PAGE B-4.0-10-1		
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory						
EXPERIMENT:								MISSION MODE: B	
4.0 Small Astronomy Telescopes			BASIC FUNCTION: 10					Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		NO.	
NO.	DESCRIPTION					TITLE			
6	Examine used gratings for contamination or deterioration	03 03	01 01	2.A.03 2.A.05	-2 -1	Spectrometer Grating Inspector SITOS Grating Inspector		0176 0177	
7	Repair SITOS malfunctioned components/instruments	07 07 07 28	01 01 01 01	4.C.02 2.A.05 4.C.07 2.A.05	 -1 -1	SITOS Fault Identifier " " " " " " SITOS Repairer		1397 1397 1397 1404	
8	Replace SITOS worn-out parts	03 26 27	01 01 01	2.A.05 2.A.05 2.A.05	-1 -1 -1	SITOS Module Inspector SITOS Module Remover SITOS Module Installer		0182 0183 0184	
13	Checkout SITOS instruments for proper operation	14 14 01	01 01 01	2.A.05 2.B.02 2.B.02	-1 -7 -7	SITOS Tester " " " "		0167 0167 0167	
14	Calibrate SITOS instruments	08 08	01 01	2.A.05 4.C.01	-1	SITOS Calibrator " "		0168 0168	
27	Change spectrometer gratings	26 27	01 01	2.A.03 2.A.03	-2 -2	Spectrometer Grating Remover Spectrometer Grating Installer		0043 0044	
28	Examine optical elements for contamination and deterioration	03 03	01 01	2.A.01 2.A.03	-2 -2	Telescope Optics Inspector Spectrometer Optics Inspector		0178 0073	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-1	
						PAGE B-4.0-10-2	
DISCIPLINE: Physics			FPE/SUBGROUP: P-1 - Space Physics Research Laboratory				
EXPERIMENT: 4.0 Small Astronomy Telescopes			MISSION MODE: B				
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
28	(Continued)	03 03	01 01	2.A.05 4.D.04	-1 -3	SITOS Optics Inspector Camera Lens Inspector	0179 0074
31	Perform maintenance functions:						
31	.1 Inspect mechanical elements of instruments for contamination, deterioration, wear and damage	03 03 03 03	01 01 01 01	2.A.01 2.A.03 2.A.05 4.D.04	-2 -2 -1 -3	Telescope Assembly Inspector Spectrometer Assembly Inspector SITOS Assembly Inspector Camera Assembly Inspector	0001 0078 0180 0181
31	.2 Fault isolate electrical and electronic instruments to identify causes of malfunctions	07 07 07 07 07 07 07	01 01 01 01 01 01 01	4.C.02 4.C.02 4.C.02 2.A.01 2.A.03 2.A.05	-1 -2 -3 -2 -2 -1	Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier Electronic Equipment Fault Identifier Telescope Fault Identifier Spectrometer Fault Identifier SITOS Fault Identifier	0795 0795 0795 0885 0038 1397
31	.3 Clean and/or decontaminate instrument optics	19 19 19 19 19	01 01 01 01 01	2.A.01 2.A.03 2.A.05 4.D.04 4.D.06	-2 -2 -1 -3 	Telescope Optics Cleaner Spectrometer Optics Cleaner SITOS Optics Cleaner Camera Lens Cleaner Optical Equipment Cleaner	0004 0095 0005 0097 0093

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-1
DISCIPLINE: Physics						PAGE	B-4.0-10-3
EXPERIMENT: 4.0 Small Astronomy Telescopes						MISSION MODE:	B
						BASIC FUNCTION:	10 Unscheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
31	.4 Replace defective/malfunctioning modules in instruments	26	01	2.A.01	-2	Telescope Module Remover	0187
		26	01	2.A.03	-2	Spectrometer Module Remover	0109
		26	01	4.D.04	-3	Camera Module Remover	0158
		27	01	2.A.01	-2	Telescope Module Installer	0188
		27	01	2.A.03	-2	Spectrometer Module Installer	0110
		27	01	4.D.04	-3	Camera Module Installer	0160
31	.5 Repair defective/malfunctioning instruments	07	01	2.A.01	-2	Telescope Fault Identifier	0885
		07	01	4.C.02		" " "	0885
		07	01	4.C.07		" " "	0885
		28	01	2.A.01	-2	Telescope Repairer	1193
		07	01	2.A.03	-2	Spectrometer Fault Identifier	0038
		07	01	4.C.02		" " "	0038
		07	01	4.C.07		" " "	0038
		28	01	2.A.03	-2	Spectrometer Repairer	0779
		07	01	2.A.05	-1	SITOS Fault Identifier	1397
		07	01	4.C.02		" " "	1397
		07	01	4.C.07		" " "	1397
		28	01	2.A.05	-1	SITOS Repairer	1404

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

- 1.0 Molecular Beam Scattering
- 2.0 Gas-Surface Interactions
- 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"
- 4.0 Chemical Lasers
- 6.0 Gas Reactions In Space

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Molecular Beam Scattering

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FLIGHT EXPERIMENT TASK-SKILLS

SERIES P-4
PAGE A-1.0-04-1

DISCIPLINE: Physics

FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory

EXPERIMENT:

MISSION MODE: A

1.0 Molecular Beam Scattering

BASIC FUNCTION: 04 Experiment Setup

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Adjust equipment for data collection	08	01	2.A.03		Spectrometer Adjustor	0189
		08	01	2.B.02	-1	Oscilloscope Adjustor	0190
		08	01	4.B.02	-1	Amplifier Adjustor	0191
		08	01	4.B.02	-2	Amplifier Adjustor	0191
		08	01	4.B.03		Phase Shifter Adjustor	0192
		08	01	4.B.04		Phase Sensitive Detector Adjustor	0193
		08	01	4.B.06		Null Signal System Adjustor	0194
		08	01	4.B.05		A/D Convertor Adjustor	0195
6	Reconfigure experiment	20	01	2.A.13		Molecular Beam Scattering Device Assembler	0196
		21	01	2.A.13		Molecular Beam Scattering Device Disassembler	0197
8	Calibrate experiment equipment	08	01	2.A.03		Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072
12	Mount experiment equipment on platform	27	01	2.A.13		Molecular Beam Scattering Device Installer	0198
		27	01	1.A.05		Molecular Beam Scattering Device Installer	0198
13	Attach platform to extendable boom	27	01	1.A.05		Mounting Platform Installer	0199
		27	01	1.A.09		" " "	0199

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4	
							PAGE A-1.0-04-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT:							MISSION MODE: A	
1.0 Molecular Beam Scattering							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
14	Deploy equipment through airlock	01	01	1.A.02	-2	Airlock Status Monitor	0009	
		15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033	
		15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034	
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138	
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032	
		15	01	1.A.01	-3	Airlock Inside Hatch Closer	0031	
		01	01	1.A.02	-1	Airlock Status Monitor	0009	
16	Point experiment equipment along velocity vector	01	01	1.A.02	-6	Instrument Pointing Direction Monitor	0200	
		01	01	2.B.02	-3	Instrument Pointing Direction Monitor	0200	
		10	01	1.A.02	-6	Instrument Pointing Direction Controller	0201	
		10	01	1.A.02	-6	Instrument Pointing Direction Controller	0201	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-1.0-06-1
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory			
EXPERIMENT:						MISSION MODE: A	
1.0 Molecular Beam Scattering						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Operate experiment equipment	01	01	2.B.02	-3	Spectrometer Operating Status Monitor	0037
		15	01	2.B.02	-3	Spectrometer Control Actuator	0036
4	Perform preliminary data analysis	12	01	3.F.01		Molecular Beam Scattering Data Analyst	0205
5	Redefine/define experiment runs with Principal Investigator	05	01	4.A.02		Radio Communicator	0206
		05	01	3.F.01		Molecular Beam Scattering Data Communicator	0207
		13	01	3.F.01		Molecular Beam Scattering Research Planner	0208
		13	01	2.A.13		Molecular Beam Scattering Research Planner	0208
		13	01	2.A.03		Molecular Beam Scattering Research Planner	0208
9	Collect experiment data	15	01	4.D.05		Tape Recorder Actuator	0202
19	Adjust magnetic field of spectrometer	08	01	2.A.03		Spectrometer Adjustor	0189
21	Initiate spectrometer scanning	15	01	2.B.02	-3	Spectrometer Control Actuator	0036

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-1.0-09-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Lab				
EXPERIMENT: 1.0 Molecular Beam Scattering						MISSION MODE: A	
							BASIC FUNCTION: 09 Scheduled Maintenance
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Maintain experiment equipment	03	01	2.A.03		Spectrometer Assembly Inspector	0078
		03	01	2.A.13		Molecular Beam Scattering Device Inspector	0210
		26	01	2.A.03		Spectrometer Module Remover	0109
		27	01	2.A.03		Spectrometer Module Installer	0110
		21	01	2.A.03		Spectrometer Disassembler	0910
		20	01	2.A.03		Spectrometer Assembler	0911
		26	01	2.A.13		Molecular Beam Scattering Device Module Remover	0218
		27	01	2.A.13		Molecular Beam Scattering Device Module Installer	0219
		21	01	2.A.13		Molecular Beam Scattering Device Disassembler	0197
		20	01	2.A.13		Molecular Beam Scattering Device Assembler	0196
8	Calibrate experiment equipment	08	01	2.A.03		Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-4
						PAGE	A-1.0-10-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT: 1.0 Molecular Beam Scattering						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Maintain experiment equipment	03	01	2.A.03		Spectrometer Assembly Inspector	0078
		03	01	2.A.13		Molecular Beam Scattering Device Inspector	0210
		07	01	2.A.03		Spectrometer Fault Identifier	0038
		07	01	2.A.13		Molecular Beam Scattering Device Fault Identifier	0211
		07	01	2.B.02	-1	Oscilloscope Fault Identifier	0048
		07	01	4.B.02	-1	Amplifier Fault Identifier	0213
		07	01	4.B.02	-2	" " "	0213
		07	01	4.B.03		Phase Shifter Fault Identifier	0214
		07	01	4.B.04		Phase Sensitive Detector Fault Identifier	0215
		07	01	4.B.06		Null Signal System Fault Identifier	0216
		07	01	4.B.05		A/D Converter Fault Identifier	0217
		07	01	4.C.02	-1	Electronic Equipment Fault Identifier	0795
		07	01	4.C.02	-2	Electronic Equipment Fault Identifier	0795
		07	01	4.C.02	-3	Electronic Equipment Fault Identifier	0795
		26	01	2.A.03		Spectrometer Module Remover	0109
		27	01	2.A.03		Spectrometer Module Installer	0110
		26	01	2.A.13		Molecular Beam Scattering Device Module Remover	0218
		27	01	2.A.13		Molecular Beam Scattering Device Module Installer	0219
		26	01	2.B.02	-1	Oscilloscope Module Remover	0159

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4	
							PAGE A-1.0-10-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT:							MISSION MODE: A	
1.0 Molecular Beam Scattering							BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
7	(Continued)	27	01	2.B.02	-1	Oscilloscope Module Installer	0161	
		26	01	4.B.02	-1	Amplifier Module Remover	0220	
		27	01	4.B.02	-1	Amplifier Module Installer	0221	
		26	01	4.B.02	-2	Amplifier Module Remover	0220	
		27	01	4.B.02	-2	Amplifier Module Installer	0221	
		26	01	4.B.03		Phase Shifter Module Remover	0222	
		27	01	4.B.03		Phase Shifter Module Installer	0223	
		26	01	4.B.04		Phase Sensitive Detector Module Remover	0224	
		27	01	4.B.04		Phase Sensitive Detector Module Installer	0225	
		26	01	4.B.05		A/D Converter Module Remover	0226	
		27	01	4.B.05		A/D Converter Module Installer	0227	
		26	01	4.B.06		Null Signal System Module Remover	0228	
		27	01	4.B.06		Null Signal System Module Installer	0229	
		8	Calibrate experiment equipment	08	01	2.A.03		Spectrometer Calibrator
08	01			4.C.01	-2	" "	0072	

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DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Gas-Surface Interactions

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-4
							PAGE	A-2.0-04-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory					
EXPERIMENT: 2.0 Gas-Surface Interactions							MISSION MODE: A	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
1	Set up experiment in airlock	18	01	2.A.16		Gas-Surface Interaction Device Unstower	0230	
		20	01	2.A.16		Gas-Surface Interaction Device Assembler	0231	
		27	01	2.A.16		Gas-Surface Interaction Device Installer	0232	
		27	01	1.A.01	-5	Gas-Surface Interaction Device Installer	0232	
		18	01	1.A.03	-1	Gas-Surface Interaction Device Unstower	0230	
2	Attach platform to extendable boom	27	01	1.A.01	-5	Mounting Platform Installer	0199	
		27	01	2.A.16		" " "	0199	
7	Calibrate Spectrometer	08	01	2.A.03		Spectrometer Calibrator	0072	
		08	01	4.C.01		" "	0072	
8	Change test surfaces	26	01	2.A.16	-1	Test Surface Remover	0233	
		27	01	2.A.16	-1	Test Surface Installer	0234	
9	Plate atomically clean surfaces	01	01	2.B.02	-4	Gas-Surface Interaction Device Plating Monitor	0235	
		15	01	2.B.02	-4	Gas-Surface Interaction Device Plating Control Actuator	0236	

FLIGHT EXPERIMENT TASK-SKILLS							SERIES	P-4	
							PAGE	A-2.0-04-2	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory						
EXPERIMENT: 2.0 Gas-Surface Interactions							MISSION MODE: A		
							BASIC FUNCTION: 04 Experiment Setup		
CREW TASK STATEMENT			CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION	TITLE				NO.			
10	Reconfigure experiment	20	01	2.A.16		Gas-Surface Interaction Device Assembler	0231		
		21	01	2.A.16		Gas-Surface Interaction Device Disassembler	0237		
13	Deploy experiment platform through airlock	27	01	1.A.01	-3	Airlock Inside Hatch Closer	0031		
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032		
		01	01	1.A.02	-1	Airlock Status Monitor	0009		
		01	01	1.A.02	-2	" " "	0009		
		15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033		
		15	01	1.A.02	-4	Rail/Boom Extension Actuator	0034		
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138		
15	Point experiment away from spacecraft	01	01	2.B.02	-4	Instrument Pointing Direction Monitor	0200		
		01	01	1.A.02	-6	Instrument Pointing Direction Monitor	0200		
		10	01	1.A.02	-6	Instrument Pointing Direction Controller	0201		
		09	01	1.A.02	-6	Instrument Pointing Direction Controller	0201		
16	Point experiment along velocity vector	01	01	1.A.02	-6	Instrument Pointing Direction Monitor	0200		
		01	01	2.B.02	-4	Instrument Pointing Direction Monitor	0200		

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4	
							PAGE A-2.0-04-3	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT: 2.0 Gas-Surface Interactions							MISSION MODE: A	
							BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
16	(Continued)	10	01	1.A.02	-6	Instrument Pointing Direction Controller		0201
		10	01	1.A.02	-6	Instrument Pointing Direction Controller		0201
18	Change test surface blocks	26	01	2.A.16	-2	Test Surface Block Remover		0238
		27	01	2.A.16	-2	Test Surface Block Installer		0239
19	Change plating material "boat"	26	01	2.A.16	-3	Plating Material Boat Remover		0240
		27	01	2.A.16	-3	Plating Material Boat Remover		0241
21	Plate atomically clean surfaces on quartz crystal microbalance	15	01	2.B.02	-4	Gas-Surface Interaction Device Plating Control Actuator		0236
		01	01	2.B.02	-4	Gas-Surface Interaction Device Plating Monitor		0235

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-2.0-06-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT: 2.0 Gas-Surface Interactions						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
3	Operate experiment	01	01	2.B.02	-4	Gas-Surface Interaction Operations Monitor	0242
		01	01	3.F.02		Gas-Surface Interactions Operations Monitor	0242
		15	01	2.B.02	-4	Gas-Surface Interaction Control Actuator	0243
		15	01	3.F.02		Gas-Surface Interaction Control Actuator	0243
		16	01	2.B.02	-4	Gas-Surface Interaction Control Deactuator	0244
		16	01	3.F.02		Gas-Surface Interaction Control Deactuator	0244
4	Monitor experiment operations	01	01	2.B.02	-4	Gas-Surface Interaction Operations Monitor	0242
		01	01	3.F.02		Gas-Surface Interaction Operations Monitor	0242
5	Photograph data display	15	01	4.D.04	-2	Camera Control Actuator	0245
6	Take notes on observed data display	06	01	3.F.02		Gas-Surface Interaction Data Recorder	0246
		06	01	4.D.08		Gas-Surface Interaction Data Recorder	0246
		02	01	2.B.02	-4	Gas-Surface Interaction Observer	0247
		02	01	3.F.02		" " " "	0247

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-2.0-06-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory				
EXPERIMENT: 2.0 Gas-Surface Interactions						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	(Continued)	04	01	2.B.02	-4	Gas-Surface Interaction Data Interpreter	0248
		04	01	3.F.02		Gas-Surface Interaction Data Interpreter	0248
11	Monitor data acquisition	01	01	2.B.02	-4	Gas-Surface Interaction Operations Monitor	0242
12	Organize notes, film, and data for shipment	17	01	2.F.01		Film Cartridge Stower	0151
		06	01	2.F.02		Gas-Surface Interaction Records Organizer	0249
		06	01	3.F.02		Gas-Surface Interaction Records Organizer	0249
		17	01	2.F.02		Hard Copy Record Stower	0250
		17	01	2.F.03		Tape Recording Stower	0203
		17	01	1.A.03	-3	Data Recording Stower	0251
20	Step test surfaces through exposure angles	15	01	2.B.02		Gas-Surfaces Interaction Control Actuator	0243
22	Adjust spectrometer for detection of various gases	15	01	2.B.02	-3	Spectrometer Control Actuator	0036
		15	01	2.A.03		" " "	0036
		15	01	3.F.02		" " "	0036
		01	01	2.B.02	-3	Spectrometer Operating Status Monitor	0037

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-2.0-06-3	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory			
EXPERIMENT:						MISSION MODE: A	
2.0 Gas-Surface Interactions						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
23	Continually reorient experiment for pointing along velocity vector (assume automatic continuous control)	01	01	1.A.02	-6	Instrument Pointing Direction Monitor	0200
		01	01	2.B.02	-4	Instrument Pointing Direction Monitor	0200

<i>SERIES</i>	P-4
<i>PAGE</i>	A-2.0-09-1

FPE/SUBGROUP: P-4 - Physics and Chemistry Laboratory

MISSION MODE: A

BASIC FUNCTION:	09	Scheduled Maintenance
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H-911

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DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

3.0 Flame Chemistry and Reaction Kinetics at
zero "G"

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-3.0-04-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
1	Mix experimental gas mixtures	10	01	5.J.01		Combustible Gas Mixing Controller	0349
		10	01	2.D.04		" " " "	0349
		10	01	2.C.16		" " " "	0349
2	Store fuel and oxidant mixtures in tank	17	01	2.D.03		Combustible Gas Mixture Stower	0350
		17	01	2.C.16		" " " "	0350
		17	01	5.J.01		" " " "	0350
12	Establish experiment initial conditions	13	01	3.I.02		Zero-G Combustion Research Planner	0351
		13	01	2.D.06		Zero-G Combustion Research Planner	0351
		13	01	2.A.28		Zero-G Combustion Research Planner	0351
		13	01	2.A.29		Zero-G Combustion Research Planner	0351
13	Calibrate Instrumentation	08	01	2.A.28		Spectrograph Calibrator	0352
		08	01	2.A.29		Gas Chromatograph Calibrator	0353
		08	01	4.C.01		-2 Spectrograph Calibrator	0352
		08	01	4.C.01		-3 Gas Chromatograph Calibrator	0353
16	Place premixed gas in various tubes	10	01	5.J.01		Combustible Gas Tube Filler	0354
		10	01	2.O.06		-1 " " " "	0354
		10	01	2.D.04		" " " "	0354
		27	01	2.D.06		-1 " " " "	0354

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-3.0-04-2	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	(Continued)	27 27	01 01	2.C.16 5.J.01		Combustible Gas Tube Filler " " " "	0354 0354
17	Monitor fire detection equipment	01	01	4.E.04		Fire Detection Equipment Monitor	0355
18	Operate fire control equipment	10	01	4.E.04		Fire Control Equipment Controller	0356

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-3.0-05-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
17	Monitor fire detection equipment	01	01	4.E.04	Fire Detection Equipment Monitor	0355	
18	Operate fire control equipment	10	01	4.E.04	Fire Control Equipment Controller	0356	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-3.0-06-1	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Initiate each experiment technique	15	01	2.B.02	-8	Zero-G Combustion Control Actuator	0357
		15	01	3.I.02		Zero-G Combustion Control Actuator	0357
		15	01	5.J.01		Zero-G Combustion Control Actuator	0357
3	Monitor experiment conduct	01	01	2.B.02	-8	Zero-G Combustion Display Monitor	0358
		01	01	5.J.01		" " " " "	0358
		01	01	3.I.02		" " " " "	0358
		02	01	3.I.02		Zero-G Combustion Observer	0369
		02	01	5.J.01		" " " "	0369
		02	01	2.D.06		" " " "	0369
6	Introduce gas mixtures into diffusion burners	15	01	2.B.02	-8	Combustible Gas Distribution Control Actuator	0359
		15	01	3.I.02		Combustible Gas Distribution Control Actuator	0359
		01	01	2.B.02	-8	Combustible Gas Distribution Monitor	0186
		15	01	5.J.01		Combustible Gas Distribution Control Actuator	0359
7	Initiate Combustion	15	01	2.B.02	-8	Zero-G Combustion Control Actuator	0357
		15	01	3.I.02		Zero-G Combustion Control Actuator	0357

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-4
DISCIPLINE: Physics						PAGE A-3.0-06-2	
FPE/SUBGROUP: P-4 Physics and Chemistry Lab						MISSION MODE: A	
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	(Continued)	15	01	5.J.01		Zero-G Combustion Control Actuator	0357
		01	01	2.B.02	-8	Zero-G Combustion Display Monitor	0358
8	Measure temperature, pressure and composition	02	01	2.B.02	-8	Temperature Measurement Observer	0360
		02	01	3.I.02	-1	" " "	0360
		02	01	5.J.01		" " "	0360
		02	01	2.A.30		" " "	0360
		06	01	2.F.02		Temperature Measurement Recorder	0361
		06	01	3.I.02	-1	" " "	0361
		06	01	5.J.01		" " "	0361
		02	01	2.B.02	-8	Pressure Measurement Observer	0362
		02	01	3.I.02	-2	" " "	0362
		02	01	5.J.01		" " "	0362
		06	01	2.F.02		Pressure Measurement Recorder	0363
		06	01	3.I.02	-2	" " "	0363
		06	01	5.J.01		" " "	0363
		02	01	2.B.02	-8	Flame Composition Measurement Observer	0364
		02	01	2.A.28		Flame Composition Measurement Observer	0364
		02	01	3.I.02	-3	Flame Composition Measurement Observer	0364
		02	01	5.J.01		Flame Composition Measurement Observer	0364
		06	01	2.F.02		Flame Composition Measurement Recorder	0365
		06	01	3.J.02	-3	Flame Composition Measurement Recorder	0365
		06	01	5.J.01		Flame Composition Measurement Recorder	0365

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	P-4
DISCIPLINE: Physics						PAGE	A-3.0-06-3
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Photograph (still/motion) flame visible structure	02	01	3.I.02	-4	Flame Visible Structure Observer	0366
		02	01	5.J.01		" " " "	0366
		15	01	4.0.04	-3	Camera Control Actuator	0245
		15	01	5.J.01		" " "	0245
10	Introduce probe gases to gas chromatograph	15	01	2.B.02	-8	Probe Gas Distribution Control Actuator	0367
		01	01	2.B.02	-8	Probe Gas Distribution Control Actuator	0367
		15	01	5.J.01		Probe Gas Distribution Control Actuator	0367
		15	01	3.I.02		Probe Gas Distribution Control Actuator	0367
11	Introduce probe gases to mass spectrograph	15	01	2.B.02	-8	Probe Gas Distribution Control Actuator	0367
		01	01	2.B.02	-8	Probe Gas Distribution Monitor	0015
		15	01	5.J.01		Probe Gas Distribution Control Actuator	0367
		15	01	3.I.02		Probe Gas Distribution Control Actuator	0367
14	Evaluate Preliminary Data	11	01	3.I.02		Zero-G Combustion Data Analyst	0368
17	Monitor fire detection equipment	01	01	4.E.04		Fire Detection Equipment Monitor	0355
18	Operate fire control equipment	10	01	4.E.04		Fire Control Equipment Controller	0356

FLIGHT EXPERIMENT TASK-SKILLS

SERIES P-4

PAGE A-3.0-09-1

DISCIPLINE: Physics

FPE/SUBGROUP: P-4 Physics and Chemistry Lab

EXPERIMENT:

3.0 Flame Chemistry and Reaction Kinetics at Zero "G"

MISSION MODE: A

BASIC FUNCTION: 09 Scheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Calibrate instrumentation	08	01	2.A.28		Spectrograph Calibrator	0352
		08	01	4.C.01	-2	" "	0352
		08	01	2.A.29		Gas Chromatograph Calibrator	0353
		08	01	4.C.01	-3	" " "	0353

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-3.0-10-1	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 3.0 Flame Chemistry and Reaction Kinetics at Zero "G"			MISSION MODE: A				
			BASIC FUNCTION: 10 Unscheduled Maintenance				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
13	Calibrate instrumentation	08	01	2.A.28		Spectrograph Calibrator	0352
		08	01	4.C.01	-2	" "	0352
		08	01	2.A.29		Gas Chromatograph Calibrator	0353
		08	01	4.C.01	-3	" " "	0353
15	Adjust faulty/malfunctioning equipment	07	01	2.D.06		Zero-G Combustion Device Fault Identifier	0370
		08	01	2.D.06		Zero-G Combustion Device Adjustor	0371
		07	01	2.A.28		Spectrograph Fault Identifier	0372
		08	01	2.A.28		Spectrograph Adjustor	0373
		07	01	2.A.29		Gas Chromatograph Fault Identifier	0374
		08	01	2.A.29		Gas Chromatograph Adjustor	0375
		07	01	2.A.30		Calorimeter Fault Identifier	0376
		08	01	2.A.30		Calorimeter Adjustor	0377
		07	01	2.B.02	-8	Zero-G Combustion C/D Equipment Fault Identifier	0378
		08	01	2.B.02	-8	Zero-G Combustion C/D Equipment Adjustor	0379

DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

4.0 Chemical Lasers

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FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-4.0-04-1	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 4.0 Chemical Lasers			MISSION MODE: A				
			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Calibrate instrumentation	08	01	2.A.03	-2	Spectrometer Calibrator	0072
		08	01	4.C.01		" "	0072
		08	01	2.A.30		Calorimeter Calibrator	0380
3	Install fuel and oxidizer for laser	27	01	2.D.07		Laser Fuel and Oxidizer Installer	0381
		27	01	2.C.07		" " " " "	0381
		27	01	2.C.06		" " " " "	0381
4	Install contamination coupons on spacecraft exterior	22	02	2.A.31	-1 -8	Contamination Coupon Translocator	0382
		22	02	1.A.01		" " "	0382
		27	02	1.A.01		Contamination Coupon Installer	0383
		27	02	2.A.31		" " "	0383
7	Install laser equipment	27	01	1.A.01	-7	Chemical Laser Installer	0384
		27	01	2.C.07		" " "	0384
12	Monitor fire detection equipment	01	01	4.E.04		Fire Detection Equipment Monitor	0355
13	Operate fire control equipment	10	01	4.E.04		Fire Control Equipment Controller	0356

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-4.0-05-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 4.0 Chemical Lasers						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Retrieve contamination coupons	26	02	1.A.01	-8	Contamination Coupon Remover	0385
		26	02	2.A.31		" " "	0385
		24	02	2.A.31		Contamination Coupon Translocator	0382
		24	02	1.A.01		" " "	0382
12	Monitor fire detection equipment	01	01	4.E.04		Fire Detection Equipment Monitor	0355
13	Operate fire control equipment	10	01	4.E.04		Fire Control Equipment Controller	0356

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4	
							PAGE A-4.0-06-1	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 4.0 Chemical Lasers						MISSION MODE: A		
						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
2	Monitor laser operation	01	01	2.B.02	-9	Chemical Laser Operation Monitor		0386
		01	01	2.C.06		" " " "	0386	
		01	01	3.I.03		" " " "	0386	
6	Measure contamination on coupons	12	01	2.A.31		Contamination Coupon Sample Measurer		0387
8	Operate laser	01	01	2.B.02	-9	Chemical Laser Operation Monitor		0386
		15	01	2.B.02	-9	Chemical Laser Control Actuator		0388
		16	01	2.B.02	-9	Chemical Laser Control Deactuator		0389
		02	01	3.I.03		Zero-G Laser Operation Observer		0390
9	Measure beam intensity and laser efficiency	01	01	2.A.30		Calorimeter Operation Monitor		0391
		15	01	2.A.30		Calorimeter Control Actuator		0392
		16	01	2.A.30		Calorimeter Control Deactuator		0393
11	Monitor temperatures in laser cavity	01	01	2.B.02	-9	Chemical Laser Temperature Monitor		0394
12	Monitor fire detection equipment	01	01	4.E.04		Fire Detection Equipment Monitor		0355
13	Operate fire control equipment	10	01	4.E.04		Fire Control Equipment Controller		0356

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DISCIPLINE: Physics

FUNCTIONAL PROGRAM ELEMENT (FPE):

P-4 Physics and Chemistry Laboratory

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

6.0 Gas Reactions In Space

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-6.0-04-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT:							MISSION MODE: A
6.0 Gas Reactions in Space			BASIC FUNCTION: 04 Experiment Setup				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Calibrate experiment instrumenta- tion	08	01	2.A.03	-7	Spectrometer Calibrator	0072
		08	01	2.A.02		Photometer Calibrator	0086
		08	01	2.A.03	-8	Spectrometer Calibrator	0072
		08	01	4.C.01	-2	" "	0072
		08	01	2.A.03	-4	" "	0072
3	Deploy chemical canisters	15	01	2.D.30		Chemical Canister Deployment Control Actuator	0401
		15	01	2.D.09		Chemical Canister Deployment Control Actuator	0401
		01	01	2.D.09		Chemical Canister Deployment Monitor	0402
4	Control subsatellite deployment/ maneuvering	10	01	4.E.02	-10	Physics Subsatellite Flight Controller	0397
		01	01	2.B.02	-10	Physics Subsatellite Flight Monitor	0398
5	Control extendable boom deployment	15	01	1.A.01	-9	Rail/Boom Extension Actuator	0034
		15	01	1.A.02	-4	" " "	0034
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
8	Aid in experiment planning	05	01	4.A.02		Radio Communicator	0206
		13	01	3.F.03		Space Gas Reactions Research Planner	0399

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-6.0-04-2
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	Coordinate simultaneous observation from space and ground	05	01	4.A.02	-14	Radio Communicator	0206
		02	01	3.F.03		Space Gas Reactions Observer	0400
		02	01	1.A.01		" " " "	0400
16	Deploy gas confinement vessels	01	01	2.D.09		Gas Canister Deployment Monitor	0396
		15	01	2.D.09		Gas Canister Deployment Control Actuator	0395
		15	01	2.D.01		Gas Canister Deployment Control Actuator	0395
19	Obtain chemical canisters from storage	18	01	1.A.03	-2	Chemical Canister Unstower	0403
		18	01	2.D.30		" " "	0403
		22	01	2.D.30		Chemical Canister Translocator	0404
20	Mount EUV spectrometer on spacecraft exterior	22	02	1.A.01	-1	Spectrometer Translocator	0008
		27	02	1.A.01	-8	Spectrometer Installer	0006
		27	02	2.A.03	-7	" "	0006
21	Mount photometer on spacecraft exterior	22	02	1.A.01	-1	Photometer Translocator	0027
		27	02	1.A.01	-8	Photometer Installer	0405
		27	02	2.A.02		" "	0405
22	Mount electron probe on spacecraft exterior	22	02	1.A.01	-1	Probe Translocator	0023
		27	02	1.A.01	-8	Probe Installer	0050
		27	02	2.A.08	-3	" "	0050

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-6.0-04-3	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
23	Mount UV, visible, IR and photographic instruments inside spacecraft at viewing port	27	01	2.A.03	-9	Spectrometer Installer	0006
		27	01	2.A.03	-10	" "	0006
		27	01	2.A.03	-8	" "	0006
		27	01	4.D.04	-4	Camera Installer	0039
		27	01	1.A.01	-14	Spectrometer Installer	0006
		27	01	1.A.01	-17	" "	0006
		27	01	1.A.01	-14	Camera Installer	0039
		27	01	1.A.01	-7	" "	0039
24	Control subsatellite instrumentation location and attitude	01	01	2.B.02	-10	Physics Subsatellite Instrumentation Monitor	0406
		10	01	2.B.02	-10	Physics Subsatellite Instrumentation Controller	0407
		10	01	3.F.03		Physics Subsatellite Instrumentation Controller	0407

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4
							PAGE A-6.0-05-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 6.0 Gas Reactions in Space			MISSION MODE: A				
			BASIC FUNCTION: 05 Experiment Shutdown				
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Control subsatellite deployment/ maneuvering	10	01	4.F.02		Physics Subsatellite Flight Controller	0397
		10	01	2.B.02	-10	Physics Subsatellite Flight Controller	0397
		01	01	2.B.02	-10	Physics Subsatellite Flight Monitor	0398
5	Control extendable boom retraction	15	01	1.A.01	-9	Rail/Boom Retraction Actuator	0131
		15	01	1.A.02	-4	" " " "	0131
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
24	Control subsatellite instrumenta- tion location and attitude	01	01	2.B.02	-10	Physics Subsatellite Instrumenta- tion Monitor	0406
		10	01	2.B.02	-10	Physics Subsatellite Instrumenta- tion Controller	0407
		10	01	3.F.03		Physics Subsatellite Instrumenta- tion Controller	0407

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4
						PAGE A-6.0-06-1
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 6.0 Gas Reactions in Space					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
2	Operate experiment instrumentation	01	01	2.B.02	-2	Instrument Power Monitor 0139
		15	01	2.B.02	-2	Instrument Power Actuator 0035
		16	01	2.B.02	-2	Instrument Power Deactuator 0408
		01	01	2.B.02	-3	Spectrometer Operating Status Monitor 0037
		15	01	2.B.02	-3	Spectrometer Control Actuator 0036
		16	01	2.B.02	-3	Spectrometer Control Deactuator 0409
		01	01	2.B.02	-11	Probe Operating Status Monitor 0410
		15	01	2.B.02	-11	Probe Control Actuator 0411
		16	01	2.8.02	-11	Probe Control Deactuator 0412
		01	01	2.8.02	-12	Photometer Operating Status Monitor 0413
		15	01	2.B.02	-12	Photometer Control Actuator 0414
		16	01	2.B.02	-12	Photometer Control Deactuator 0415
3	Deploy chemical canisters	15	01	2.D.30		Chemical Canister Deployment Control Actuator 0401
		15	01	2.D.09		Chemical Canister Deployment Control Actuator 0401
		01	01	2.D.09		Chemical Canister Deployment Monitor 0402
4	Control subsatellite deployment/ maneuvering	10	01	4.F.02		Physics Subsatellite Flight Controller 0397
		10	01	2.B.02	-10	Physics Subsatellite Flight Controller 0397
		01	01	2.B.02	-10	Physics Subsatellite Flight Monitor 0398

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-6.0-06-2	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab				
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	Control extendable boom deployment	15	01	1.A.01	-9	Rail/Boom Extension Actuator	0034
		15	01	1.A.02	-4	" " " "	0034
		01	01	1.A.02	-5	Rail/Boom Position Monitor	0138
6	Observe subsatellite/boom position with respect to released chemical cloud	02	01	1.A.01	-9	Rail/Boom-Cloud Observer	0416
		02	01	1.A.01	-14	" " " "	0416
		02	01	3.F.03		" " " "	0416
		04	01	1.A.01	-9	Rail/Boom-Cloud Position Determiner	0417
		04	01	3.F.03		Rail/Boom-Cloud Position Determiner	0417
		02	01	1.A.01	-14	Physics Subsattellite-Cloud Observer	0418
		02	01	4.F.02		Physics Subsattellite-Cloud Observer	0418
		02	01	3.F.03		Physics Subsattellite-Cloud Observer	0418
		04	01	3.F.03		Physics Subsattellite-Cloud Position Determiner	0419
		04	01	4.F.02		Physics Subsattellite-Cloud Position Determiner	0419
7	Monitor experiment data acquisition	01	01	2.B.02	-13	Space Gas Reactions Data Monitor	0420
		01	01	3.F.03		" " " " "	0420

FLIGHT EXPERIMENT TASK-SKILLS							SERIES P-4	
							PAGE A-6.0-06-3	
DISCIPLINE: Physics			FPE/SUBGROUP: P-4 Physics and Chemistry Lab					
EXPERIMENT: 6.0 Gas Reactions in Space							MISSION MODE: A	
							BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE		NO.
8	Aid in experiment planning	05 13	01 01	4.A.02 3.F.03		Radio Communicator Space Gas Reactions Research Planner	0206 0399	
9	Coordinate simultaneous observations from space and ground	05 02 02	01 01 01	4.A.02 3.F.03 1.A.01	-14	Radio Communicator Space Gas Reactions Observer " " " "	0206 0400 0400	
10	Visually monitor cloud releases	02 02 02	01 01 01	2.B.02 1.A.01 3.F.03	-13 -12	Space Gas Reactions Observer " " " " " " " "	0400 0400 0400	
11	Direct experiment observation	05 13	01 01	3.F.03 3.F.03		Space Gas Reactions Observation Director Space Gas Reactions Research Planner	0421 0399	
12	Determine experiment duration based on observations/results	02 13	01 01	3.F.03 3.F.03		Space Gas Reactions Observer Space Gas Reactions Research Planner	0400 0399	
13	Release chemicals from canisters	15	01	2.B.02	-14	Chemical Canister Chemical Release Actuator	0422	
14	Photograph spatial dispersions of clouds	02	01	3.F.03		Space Gas Reactions Observer	0400	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
						PAGE A-6.0-06-4	
DISCIPLINE: Physics				FPE/SUBGROUP: p-4 Physics and Chemistry Lab			
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
14	(Continued)	02 10	01 01	1.A.01 4.D.04	-14 -4	Space Gas Reactions Observer Camera Controller	0400 0335
18	Record times of all observations	02 02 06 06	01 01 01 01	3.F.03 1.A.01 3.F.03 4.D.10	-14	Space Gas Reactions Observer " " " " Space Gas Reactions Data Recorder " " " "	0400 0400 0423 0423
24	Control subsatellite instrumenta- tion location and attitude	01 10 10	01 01 01	2.B.02 2.B.02 3.F.03	-10 -10	Physics Subsatellite Instrumenta- tion Monitor Physics Subsatellite Instrumenta- tion Controller Physics Subsatellite Instrumenta- tion Controller	0406 0407 0407

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
DISCIPLINE: Physics						PAGE A-6.0-09-1	
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
FPE/SUBGROUP: P-4 Physics and Chemistry Lab						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
1	Calibrate experiment instrumentation	08	01	2.A.03	-7	Spectrometer Calibrator	0072
		08	01	2.A.02		Photometer Calibrator	0086
		08	01	2.A.03	-8	Spectrometer Calibrator	0072
		08	01	4.C.01	-1	" "	0072
		08	01	4.C.01	-2	" "	0072
		08	01	2.A.03	-4	" "	0072

FLIGHT EXPERIMENT TASK-SKILLS						SERIES P-4	
DISCIPLINE: Physics				FPE/SUBGROUP: P-4 Physics and Chemistry Lab			
EXPERIMENT: 6.0 Gas Reactions in Space						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE	NO.	
1	Calibrate experiment instrumenta- tion	08	01	2.A.03	-7	Spectrometer Calibrator	0072
		08	01	2.A.02		Photometer Calibrator	0086
		08	01	2.A.03	-8	Spectrometer Calibrator	0072
		08	01	4.C.01	-1	" "	0072
		08	01	4.C.01	-2	" "	0072
		08	01	2.A.03	-4	" "	0072

DEVELOPMENT OF FLIGHT EXPERIMENT TASK REQUIREMENTS

NASW-2192

FINAL REPORT

VOLUME II - TECHNICAL REPORT

PART II - APPENDIX H: TASK-SKILLS DATA SHEETS

DISCIPLINE: Technology

FUNCTIONAL PROGRAM ELEMENT (FPE):

T-5 Teleoperations

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENTS:

1.0 Initial Flight Experiment

2.0 Functional Manipulation Experiment

DISCIPLINE: Technology

FUNCTIONAL PROGRAM ELEMENT (FPE):

T-5 Teleoperations

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

1.0 Initial Flight Experiment

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-1.0-04-1
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 1.0 Initial Flight Experiment						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Replenish Teleoperator spacecraft propellant	15	01	2.E.08		Refueling System Control Actuator	0424
		16	01	2.E.08		Refueling System Control Deactuator	0425
		01	01	2.E.08		Refueling System Monitor	0426
		15	01	2.C.10		Teleoperator Refueling Control Actuator	0427
		16	01	2.C.10		Teleoperator Refueling Control Deactuator	0428
		01	01	2.C.10		Teleoperator Fuel Status Monitor	0429
		15	01	2.B.07	-1	Teleoperator Refueling Control Actuator	0427
		16	01	2.B.07	-1	Teleoperator Refueling Control Deactuator	0428
		01	01	2.B.07	-1	Teleoperator Fuel Status Monitor	0429
5	Recharge Teleoperator spacecraft battery	15	01	2.E.07		Battery Charging System Control Actuator	0430
		16	01	2.E.07		Battery Charging System Control Deactuator	0431
		01	01	2.E.07		Battery Charging System Monitor	0432
		15	01	2.C.10		Teleoperator Battery Charging Control Actuator	0433
		16	01	2.C.10		Teleoperator Battery Charging Control Deactuator	0434
		01	01	2.C.10		Teleoperator Battery Charge Status Monitor	0435
		15	01	2.B.07	-1	Teleoperator Battery Charging Control Actuator	0433
		16	01	2.B.07	-1	Teleoperator Battery Charging Control Deactuator	0434

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-1.0-04-2
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 1.0 Initial Flight Experiment						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	01	01	2.B.07	-1	Teleoperator Battery Charge Status Monitor	0435
12	Perform preliminary subsystem checks	03	01	2.C.10	-1	Teleoperator Subsystem Inspector	0436
		14	01	2.C.10		Teleoperator Subsystem Tester	0437
		14	01	4.C.02		" " "	0437
		14	01	2.B.07		" " "	0437
13.	Evacuate airlock	01	01	1.A.02	-2	Airlock Status Monitor	0009
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
		01	01	1.A.02	-1	Airlock Status Monitor	0009
14	Open outer door	01	01	1.A.02	-3	Airlock Status Monitor	0009
		15	10	1.A.02	-3	Airlock Outside Hatch Opener	0033
15	Initiate Teleoperator deployment from airlock	01	01	2.0.11	-1	Teleoperator Deployment Mechanism Monitor	0438
		15	01	2.0.11		Teleoperator Deployment Control Actuator	0439
		01	01	2.B.07		Teleoperator Deployment Mechanism Monitor	0438
		15	01	2.B.07		Teleoperator Deployment Control Actuator	0439

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
DISCIPLINE: Technology							PAGE A-1.0-04-3
EXPERIMENT: 1.0 Initial Flight Experiment							MISSION MODE: A
BASIC FUNCTION: 04 Experiment Setup							
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Release Teleoperator from docking adapter	01	01	2.C.12		Docking Adapter Status Monitor	0440
		15	01	2.C.12		Docking Adapter Release Control Actuator	0441
		01	01	2.B.07	-1	Docking Adapter Status Monitor	0440
		15	01	2.B.07	-1	Docking Adapter Release Control Actuator	0441
26	Monitor Teleoperator systems	01	01	2.C.10		Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07	-1	" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-1.0-05-1	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 1.0 Initial Flight Experiment						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
22	Draw Teleoperator into airlock	01	01	2.D.11		Teleoperator Retrieval Mechanism Monitor	0443
		15	01	2.D.11		Teleoperator Retrieval Control Actuator	0444
		01	01	2.B.07	-1	Teleoperator Retrieval Mechanism Monitor	0443
		15	01	2.B.07	-1	Teleoperator Retrieval Control Actuator	0444
26	Monitor Teleoperator systems	01	01	2.C.10		Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07	-1	" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
DISCIPLINE: Technology						PAGE A-1.0-06-1	
FPE/SUBGROUP: T-5 Teleoperations						MISSION MODE: A	
EXPERIMENT: 1.0 Initial Flight Experiment						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Control Teleoperator spacecraft flight	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		02(30)	01	2.B.07		" " "	0446
8	Evaluate Teleoperator spacecraft performance	11	01	3.M	-1	Teleoperator Performance Evaluator	0447
		11	01	2.C.10		Teleoperator Performance Evaluator	0447
		11	01	2.B.07		Teleoperator Performance Evaluator	0447
		11	01	4.F.03		Teleoperator Performance Evaluator	0447
		11	01	2.C.11		Teleoperator Performance Evaluator	0447
9	Determine need for Teleoperator spacecraft design change	04	01	2.C.10	-1	Teleoperator Deficiency Determiner	0448
		04	01	2.B.07		Teleoperator Deficiency Determiner	0448
		04	01	4.F.03		Teleoperator Deficiency Determiner	0448
		04	01	2.C.11		Teleoperator Deficiency Determiner	0448
		11	01	2.C.10	-1	Teleoperator Design Evaluator	0449
		11	01	2.B.07		" " "	0449
		11	01	4.F.03		" " "	0449
		11	01	2.C.11		" " "	0449

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-1.0-06-2	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 1.0 Initial Flight Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
9	(Continued)	13	01	2.C.10	-1	Teleoperator Design Planner	0450
		13	01	2.B.07		" " "	0450
		13	01	4.F.03		" " "	0450
		13	01	2.C.11		" " "	0450
10	Evaluate man-machine relationships	04	01	2.C.10	-1	Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.B.07		Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	4.F.03		Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.C.11		Teleoperator/Man Interface Deficiency Determiner	0451
		11	01	2.C.10	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.B.07		Teleoperator/Man Interface Design Evaluator	0452
		11	01	4.F.03		Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.C.11		Teleoperator/Man Interface Design Evaluator	0452
		13	01	2.C.10	-1	Teleoperator/Man Interface Design Planner	0453
		13	01	2.B.07		Teleoperator/Man Interface Design Planner	0453
		13	01	4.F.03		Teleoperator/Man Interface Design Planner	0453
		13	01	2.C.11		Teleoperator/Man Interface Design Planner	0453

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5		
						PAGE A-1.0-06-3		
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				MISSION MODE: A	
EXPERIMENT: 1.0 Initial Flight Experiment			BASIC FUNCTION: 06 Experiment Conduct					
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL			
NO.	DESCRIPTION				TITLE	NO.		
17	Fly Teleoperator from parent spacecraft	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445	
		02(30)	01	2.B.07		" " "	0445	
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446	
		10(30)	01	3.M		" " "	0446	
18	Remotely fly Teleoperator in close proximity to spacecraft	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445	
		02(30)	01	2.B.07		" " "	0445	
		02(30)	01	1.B		" " "	0445	
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446	
		10(30)	01	2.B.07		" " "	0446	
		10(30)	01	1.B		" " "	0446	
		10(30)	01	3.M		" " "	0446	
19	Conduct external survey of parent spacecraft	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445	
		02(30)	01	2.B.07		" " "	0445	
		02(30)	01	3.M		" " "	0445	
		03(30)	01	1.B	-1	Spacecraft External Surface Inspector	0454	
		03(30)	01	2.B.07		Spacecraft External Surface Inspector	0454	
		03(30)	01	2.C.10		Spacecraft External Surface Inspector	0454	
		03(30)	01	1.A.01	-15	Spacecraft External Surface Inspector	0454	
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446	
		10(30)	01	2.B.07	-1	" " "	0446	
		10(30)	01	1.B		" " "	0446	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-1.0-06-4	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 1.0 Initial Flight Experiment			MISSION MODE: A				
			BASIC FUNCTION: 06 Experiment Conduct				
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
20	Remotely fly Teleoperator to distant point and return	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	3.M		" " "	0446
21	Dock Teleoperator to docking adaptor	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		02(30)	01	2.C.12		" " "	0445
		02(30)	01	2.C.12		Teleoperator Docking Observer	0455
		02(30)	01	2.C.10		" " "	0455
		02(30)	01	2.C.10		" " "	0455
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	3.M		" " "	0446
23	Evaluate video/illumination systems	11	01	2.C.10	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.B.07	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	3.M		Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.C.11		Teleoperator/Man Interface Design Evaluator	0452
		04	01	2.C.10	-1	Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.B.07	-1	Teleoperator/Man Interface Deficiency Determiner	0451

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5		
						PAGE A-1.0-06-5		
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations					
EXPERIMENT:							MISSION MODE: A	
1.0 Initial Flight Experiment						BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL		
NO.	DESCRIPTION					TITLE	NO.	
23	(Continued)	04	01	3.M		Teleoperator/Man Interface Deficiency Determiner	0451	
24	Determine communication deadzones	10(30)	01	2.C.10		Teleoperator Flight Controller	0446	
		10(30)	01	1.B		" " "	0446	
		10(30)	01	2.B.07	-1	" " "	0446	
		10(30)	01	3.M		" " "	0446	
		02(30)	01	2.C.10		Teleoperator Flight Observer	0445	
		02(30)	01	2.B.07	-1	" " "	0445	
		10(30)	01	2.C.10	-2	Teleoperator Communication System Controller	0456	
		10(30)	01	2.C.10		Teleoperator Communication System Controller	0456	
		10(30)	01	1.B		Teleoperator Communication System Controller	0456	
		10(30)	01	3.M		Teleoperator Communication System Controller	0456	
		11	01	2.C.10	-2	Teleoperator Communication System Evaluator	0457	
		11	01	1.B		Teleoperator Communication System Evaluator	0457	
		11	01	3.M		Teleoperator Communication System Evaluator	0457	
		04	01	2.C.10	-2	Teleoperator Communication Deadzone Determiner	0458	
		04	01	2.C.10		Teleoperator Communication Deadzone Determiner	0458	
04	01	1.B		Teleoperator Communication Deadzone Determiner	0458			

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5
						PAGE A-1.0-06-6
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 1.0 Initial Flight Experiment					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL
NO.	DESCRIPTION					TITLE NO.
24	(Continued)	04	01	3.M		Teleoperator Communication 0458
						Deadzone Determiner
		04	01	2.B.07	-1	Teleoperator Communication 0458
						Deadzone Determiner
25	Determine multipath effects	10(30)	01	2.C.10		Teleoperator Flight Controller 0446
		10(30)	01	1.B		" " " 0446
		10(30)	01	2.B.07	-1	" " " 0446
		10(30)	01	3.M		" " " 0446
		02(30)	01	2.C.10		Teleoperator Flight Observer 0445
		02(30)	01	2.B.07	-1	" " " 0445
		10(30)	01	2.C.10	-2	Teleoperator Communication 0456
						System Controller
		10(30)	01	2.C.10		Teleoperator Communication 0456
						System Controller
		10(30)	01	1.B		Teleoperator Communication 0456
						System Controller
		10(30)	01	3.M		Teleoperator Communication 0456
						System Controller
		11	01	2.C.10	-2	Teleoperator Communication 0457
						System Evaluator
		11	01	2.C.10		Teleoperator Communication 0457
						System Evaluator
		11	01	1.B		Teleoperator Communication 0457
						System Evaluator
		11	01	3.M		Teleoperator Communication 0457
						System Evaluator
		11	01	3.F		Teleoperator Communication 0457
						System Evaluator

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-1.0-06-7	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT:						MISSION MODE: A	
1.0 Initial Flight Experiment						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
25	(Continued)	04	01	2.C.10	-2	Teleoperator Multipath Effects Determiner	0459
		04	01	2.C.10		Teleoperator Multipath Effects Determiner	0459
		04	01	1.B		Teleoperator Multipath Effects Determiner	0459
		04	01	3.M	Teleoperator Multipath Effects Determiner	0459	
		04	01	2.B.07	-1	Teleoperator Multipath Effects Determiner	0459
		04	01	3.F		Teleoperator Multipath Effects Determiner	0459
26	Monitor Teleoperator Systems	01	01	2.C.10	-1	Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07		" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-1.0-09-1	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 1.0 Initial Flight Experiment						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
7	Adjust Teleoperator spacecraft as required	08	01	2.C.10		Teleoperator Subsystem Adjustor	0460

FLIGHT EXPERIMENT TASK-SKILLS

SERIES T-5

PAGE A-1.0-10-1

DISCIPLINE: Technology

FPE/SUBGROUP: T-5 Teleoperations

EXPERIMENT:

1.0 Initial Flight Experiment

MISSION MODE: A

BASIC FUNCTION: 10 Unscheduled Maintenance

CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Repair Teleoperator as required	03	01	2.C.10		Teleoperator System Inspector	0461
		07	01	2.C.10		Teleoperator System Fault Identifier	0462
		28	01	2.C.10		Teleoperator System Repairer	1393
7	Adjust Teleoperator as required	08	01	2.C.10		Teleoperator Subsystem Adjustor	0460

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DISCIPLINE: Technology

FUNCTIONAL PROGRAM ELEMENT (FPE):

T-5 Teleoperations

MISSION MODE: A - Shuttle-Sortie, limited duration

EXPERIMENT:

2.0 Functional Manipulation Experiment

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FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-04-1
DISCIPLINE: Technology		FPE/SUBGROUP: T-5 Teleoperations					
EXPERIMENT: 2.0 Functional Manipulation Experiment		MISSION MODE: A					
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
4	Replenish Teleoperator spacecraft propellant	15	01	2.E.08		Refueling System Control Actuator	0424
		16	01	2.E.08		Refueling System Control De-actuator	0425
		01	01	2.E.08		Refueling System Monitor	0426
		15	01	2.C.10		Teleoperator Refueling Control Actuator	0427
		16	01	2.C.10		Teleoperator Refueling Control Deactuator	0428
		01	01	2.C.10		Teleoperator Fuel Status Monitor	0429
		15	01	2.B.07	-1	Teleoperator Refueling Control Actuator	0427
		16	01	2.B.07	-1	Teleoperator Refueling Control Deactuator	0428
		01	01	2.B.07	-1	Teleoperator Fuel Status Monitor	0429
5	Recharge Teleoperator spacecraft battery	15	01	2.E.07		Battery Charging System Control Actuator	0430
		16	01	2.E.07		Battery Charging System Control Deactuator	0431
		01	01	2.E.07		Battery Charging System Monitor	0432
		15	01	2.C.10		Teleoperator Battery Charging Control Actuator	0433
		16	01	2.C.10		Teleoperator Battery Charging Control Deactuator	0434
		01	01	2.C.10		Teleoperator Battery Charge Status Monitor	0435
		15	01	2.B.07	-1	Teleoperator Battery Charging Control Actuator	0433
		16	01	2.B.07	-1	Teleoperator Battery Charging Control Deactuator	0434

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-04-2
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment			MISSION MODE: A				
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
5	(Continued)	01	01	2.B.07	-1	Teleoperator Battery Charge Status Monitor	0435
12	Perform preliminary subsystem checks	03	01	2.C.10		Teleoperator Subsystem Inspector	0436
		14	01	2.C.10		Teleoperator Subsystem Tester	0437
		14	01	4.C.02		" " "	0437
		14	01	2.B.07	-1	" " "	0437
13	Evacuate airlock	01	01	1.A.02	-2	Airlock Status Monitor	0009
		15	01	1.A.02	-2	Airlock Depressurization Actuator	0032
		01	01	1.A.02	-1	Airlock Status Monitor	0009
14	Open outer door	01	01	1.A.02	-3	Airlock Status Monitor	0009
		15	01	1.A.02	-3	Airlock Outside Hatch Opener	0033
15	Initiate Teleoperator deployment from airlock	01	01	2.0.11		Teleoperator Deployment Mechanism Monitor	0438
		15	01	2.0.11		Teleoperator Deployment Control Actuator	0439
		01	01	2.B.07	-1	Teleoperator Deployment Mechanism Monitor	0438
		15	01	2.B.07	-1	Teleoperator Deployment Control Actuator	0439

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-04-3	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 04 Experiment Setup	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
16	Release Teleoperator from docking adapter	01	01	2.C.12		Docking Adapter Status Monitor	0440
		15	01	2.C.12		Docking Adapter Release Control Actuator	0441
		01	01	2.B.07	-1	Docking Adapter Status Monitor	0440
		15	01	2.B.07	-1	Docking Adapter Release Control Actuator	0441
26	Monitor Teleoperator systems	01	01	2.C.10		Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07	-1	" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-05-1
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 05 Experiment Shutdown	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
22	Draw Teleoperator into airlock	01	01	2.D.11		Teleoperator Retrieval Mechanism Monitor	0443
		15	01	2.D.11		Teleoperator Retrieval Control Actuator	0444
		01	01	2.B.07	-1	Teleoperator Retrieval Mechanism Monitor	0443
		15	01	2.B.07	-1	Teleoperator Retrieval Control Actuator	0444
26	Monitor Teleoperator systems	01	01	2.C.10		Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07	-1	" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-1	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
2	Control Teleoperator spacecraft flight	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
8	Evaluate Teleoperator spacecraft performance	11	01	3.M		Teleoperator Performance Evaluator	0447
		11	01	2.C.10		" " "	0447
		11	01	2.B.07	-1	" " "	0447
		11	01	4.F.03		" " "	0447
		11	01	2.C.11		" " "	0447
9	Determine need for Teleoperator spacecraft design changes	04	01	2.C.10		Teleoperator Deficiency Determiner	0448
		04	01	2.B.07	-1	Teleoperator Deficiency Determiner	0448
		04	01	4.F.03		Teleoperator Deficiency Determiner	0448
		04	01	2.C.11		Teleoperator Deficiency Determiner	0448
		11	01	2.C.10		Teleoperator Design Evaluator	0449
		11	01	2.B.07	-1	" " "	0449
		11	01	4.F.03		" " "	0449
		11	01	2.C.11		" " "	0449
		13	01	2.C.10		Teleoperator Design Planner	0450
		13	01	2.B.07	-1	" " "	0450
		13	01	4.F.03		" " "	0450
		13	01	2.C.11		" " "	0450

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-2	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
10	Evaluate man-machine relationships	04	01	2.C.10		Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.B.07	-1	Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	4.F.03		Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.C.11		Teleoperator/Man Interface Deficiency Determiner	0451
		11	01	2.C.10		Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.B.07	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	4.F.03		Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.C.11		Teleoperator/Man Interface Design Evaluator	0452
		13	01	2.C.10		Teleoperator/Man Interface Design Planner	0453
		13	01	2.B.07	-1	Teleoperator/Man Interface Design Planner	0453
		13	01	4.F.03		Teleoperator/Man Interface Design Planner	0453
		13	01	2.C.11		Teleoperator/Man Interface Design Planner	0453
17	Fly Teleoperator from parent spacecraft	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	3.M		" " "	0446

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-3	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
18	Remotely fly Teleoperator in close proximity to spacecraft	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	1.B		" " "	0445
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	1.B		" " "	0446
		10(30)	01	3.M		" " "	0446
19	Conduct external survey of parent spacecraft	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	3.M		" " "	0445
		03(30)	01	1.B	-1	Spacecraft External Surface Inspector	0454
		03(30)	01	2.B.07		Spacecraft External Surface Inspector	0454
		03(30)	01	2.C.10	-1	Spacecraft External Surface Inspector	0454
		03(30)	01	1.A.01	-15	Spacecraft External Surface Inspector	0454
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	1.B		" " "	0446
20	Remotely fly Teleoperator to distant point and return	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	3.M		" " "	0446

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-4	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment					MISSION MODE: A		
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
21	Dock Teleoperator to docking adaptor	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		02(30)	01	2.C.12		" " "	0445
		02(30)	01	2.C.12		Teleoperator Docking Observer	0455
		02(30)	01	2.B.07	-1	" " "	0455
		02(30)	01	2.C.10		" " "	0455
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	2.C.12		" " "	0446
		10(30)	01	3.M		" " "	0446
23	Evaluate video/illumination systems	11	01	2.C.10	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.B.07	-1	Teleoperator/Man Interface Design Evaluator	0452
		11	01	3.M		Teleoperator/Man Interface Design Evaluator	0452
		11	01	2.C.11		Teleoperator/Man Interface Design Evaluator	0452
		04	01	2.C.10	-1	Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	2.B.07	-1	Teleoperator/Man Interface Deficiency Determiner	0451
		04	01	3.M		Teleoperator/Man Interface Deficiency Determiner	0451

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5
						PAGE A-2.0-06-5
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 2.0 Functional Manipulation Experiment					MISSION MODE: A	
					BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.	TASK - SKILL	
NO.	DESCRIPTION				TITLE	NO.
24	Determine communication deadzones	10(30)	01	2.C.10	Teleoperator Flight Controller	0446
		10(30)	01	1.B	" " "	0446
		10(30)	01	2.B.07	" " "	0446
		10(30)	01	3.M	" " "	0446
		02(30)	01	2.C.10	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	" " "	0445
		10(30)	01	2.C.10	Teleoperator Communication System Controller	0456
		10(30)	01	2.C.10	Teleoperator Communication System Controller	0456
		10(30)	01	1.B	Teleoperator Communication System Controller	0456
		10(30)	01	3.M	Teleoperator Communication System Controller	0456
		11	01	2.C.10	Teleoperator Communication System Evaluator	0457
		11	01	2.C.10	Teleoperator Communication System Evaluator	0457
		11	01	1.B	Teleoperator Communication System Evaluator	0457
		11	01	3.M	Teleoperator Communication System Evaluator	0457
		04	01	2.C.10	Teleoperator Communication Dead-zone Determiner	0458
		04	01	2.C.10	Teleoperator Communication Dead-zone Determiner	0458
		04	01	1.B	Teleoperator Communication Dead-zone Determiner	0458
		04	01	3.M	Teleoperator Communication Dead-zone Determiner	0458

FLIGHT EXPERIMENT TASK-SKILLS

SERIES T-5

PAGE A-2.0-06-6

DISCIPLINE: Technology

FPE/SUBGROUP: T-5 Teleoperations

EXPERIMENT:

2.0 Functional Manipulation Experiment

MISSION MODE: A

BASIC FUNCTION: 06 Experiment Conduct

CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
24	(Continued)	04	01	2.B.07	-1	Teleoperator Communication Dead-zone Determiner	0458
25	Determine multipath effects	10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	1.B		" " "	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	3.M		" " "	0446
		02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		10(30)	01	2.C.10	-2	Teleoperator Communication System Controller	0456
		10(30)	01	2.C.10		Teleoperator Communication System Controller	0456
		10(30)	01	1.B		Teleoperator Communication System Controller	0456
		10(30)	01	3.M		Teleoperator Communication System Controller	0456
		11	01	2.C.10	-2	Teleoperator Communication System Evaluator	0457
		11	01	2.C.10		Teleoperator Communication System Evaluator	0457
		11	01	1.B		Teleoperator Communication System Evaluator	0457
		11	01	3.M		Teleoperator Communication System Evaluator	0457
		11	01	3.F		Teleoperator Communication System Evaluator	0457
		04	01	2.C.10	-2	Teleoperator Multipath Effects Determiner	0459

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	T-5
DISCIPLINE: Technology						PAGE	A-2.0-06-7
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
25	(Continued)	04	01	2.C.10		Teleoperator Multipath Effects Determiner	0459
		04	01	1.B		Teleoperator Multipath Effects Determiner	0459
		04	01	3.M		Teleoperator Multipath Effects Determiner	0459
		04	01	2.B.07	-1	Teleoperator Multipath Effects Determiner	0459
		04	01	3.F		Teleoperator Multipath Effects Determiner	0459
26	Control Teleoperator manipulative functions	02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
27	Evaluate ease of adaptation to changing lighting conditions	11	01	2.C.10	-1	Lighting Adaptation Evaluator	0465
		11	01	5.B		" " "	0465
		11	01	3.M		" " "	0465
		11	01	2.B.07	-1	" " "	0465

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-8
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
28	Evaluate monocular vs. binocular viewing	11	01	2.B.07	-1	Teleoperator Video Systems Evaluator	0466
		11	01	3.M		Teleoperator Video Systems Evaluator	0466
		11	01	2.C.10	-1	Teleoperator Video Systems Evaluator	0466
		11	01	5.B		Teleoperator Video Systems Evaluator	0466
		15(30)	01	2.B.07	-1	Teleoperator Video Control Actuator	0467
29	Control Teleoperator visual acquisition of task board	02(30)	01	2.C.10	-1	Teleoperator Video Presentation Observer	0468
		02(30)	01	2.B.07	-1	Teleoperator Video Presentation Observer	0468
		02(30)	01	3.M		Teleoperator Video Presentation Observer	0468
		02(30)	01	2.C.11		Teleoperator Video Presentation Observer	0468
		10(30)	01	2.B.07	-1	Teleoperator Video Acquisition Controller	0469
		10(30)	01	2.C.10	-1	Teleoperator Video Acquisition Controller	0469
		10(30)	01	2.C.11		Teleoperator Video Acquisition Controller	0469
		10(30)	01	3.M		Teleoperator Video Acquisition Controller	0469

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-9	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment					MISSION MODE: A		
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
30	Identify task board docking points	02(30)	01	2.C.10	-1	Task Board Docking Point Identifier	0470
		02(30)	01	3.M		Task Board Docking Point Identifier	0470
		02(30)	01	2.C.11		Task Board Docking Point Identifier	0470
		02(30)	01	2.B.07	-1	Task Board Docking Point Identifier	0470
31	Rendezvous Teleoperator with task board	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	2.C.11		" " "	0445
		02(30)	01	3.M		" " "	0445
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	2.C.11		" " "	0446
		10(30)	01	3.M		" " "	0446
32	Dock Teleoperator to task board	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.C.11		" " "	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	3.M		" " "	0445
		02(30)	01	2.C.10	-1	Teleoperator Docking Observer	0455
		02(30)	01	2.C.11		" " "	0455
		02(30)	01	2.B.07		" " "	0455
		02(30)	01	3.M		" " "	0455
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-10
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
32	(Continued)	10(30)	01	2.C.11		Teleoperator Flight Controller	0446
		10(30)	01	3.M		" " "	0446
33	Evaluate TV video presentations	02(30)	01	2.C.10	-1	Teleoperator Video Presentation Observer	0468
		02(30)	01	3.M		Teleoperator Video Presentation Observer	0468
		11	01	2.C.10	-1	Teleoperator Video Systems Evaluator	0466
		11	01	3.M		Teleoperator Video Systems Evaluator	0466
34	Interchange binocular and monocular TV	15(30)	01	2.B.07	-1	Teleoperator Video Control Actuator	0467
		15(30)	01	2.C.10	-1	Teleoperator Video Control Actuator	0467
		16(30)	01	2.B.07	-1	Teleoperator Video Control Deactuator	0471
		16(30)	01	2.C.10	-1	Teleoperator Video Control Deactuator	0471
35	Evaluate manipulator system dynamics	02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-11
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment					MISSION MODE: A		
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
35	(Continued)	11	01	2.C.10		Teleoperator Performance Evaluator	0447
		11	01	2.B.07	-1	Teleoperator Performance Evaluator	0447
		11	01	3.M		Teleoperator Performance Evaluator	0447
36	Replace thermal insulation pack on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-1	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-1	Teleoperator Manipulations Controller	0464
37	Replace film pack on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-2	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-12
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION:06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
37	(Continued)	02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-2	Teleoperator Manipulations Controller	0464
38	Replace thruster assembly on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-3	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-3	Teleoperator Manipulations Controller	0464

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-13	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
39	Assemble/disassemble satellite skin panel on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-4	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-4	Teleoperator Manipulations Controller	0464

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-14
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment			MISSION MODE: A				
					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
40	Connect/disconnect electrical connector on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-5	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-5	Teleoperator Manipulations Controller	0464
41	Connect/disconnect fuel transfer lines on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-6	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-15
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
41	(Continued)	10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-6	Teleoperator Manipulations Controller	0464
42	Remove/replace adjustment/alignment stops on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-7	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-7	Teleoperator Manipulations Controller	0464
43	Remove/replace structural fasteners on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-8	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463

FLIGHT EXPERIMENT TASK-SKILLS						SERIES	T-5
DISCIPLINE: Technology						PAGE	A-2.0-06-16
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
43	(Continued)	02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-8	Teleoperator Manipulations Controller	0464
44	Assemble/disassemble jury structure on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-9	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-9	Teleoperator Manipulations Controller	0464

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			PAGE A-2.0-06-17
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
45	Replace electronic modules on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-10	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-10	Teleoperator Manipulations Controller	0464
46	Actuate fluid valves on task board	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.11	-11	" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-18
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
46	(Continued)	10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.11	-11	Teleoperator Manipulations Controller	0464
47	Interchange manipulator tools and end effectors	02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
48	Operate manipulator tools and end effectors	10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
49	"Fly" Teleoperator to subsatellite storage point	02(30)	01	2.B.07	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.C.10		" " "	0445
		02(30)	01	2.D.16		" " "	0445
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-19
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
49	(Continued)	10(30)	01	2.D.16		Teleoperator Flight Controller	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
50	Grasp subsatellite with Teleoperator effectors	02(30)	01	2.B.07	-1	Task Board Subsattellite Observer	0473
		02(30)	01	2.D.16		" " " "	0473
		02(30)	01	4.F.03		" " " "	0473
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		10(30)	01	2.D.16		Teleoperator Manipulations Controller	0464
51	Release subsatellite from airlock	01	01	2.D.16		Airlock Status Monitor	0009
		01	01	2.B.07	-1	" " "	0009
		01	01	1.A.02	-1	" " "	0009
		01	01	2.B.07	-1	Task Board Subsattellite Release Control Actuator	0474

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-20
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
51	(Continued)	15	01	2.D.16		Task Board Subsatellite	0474
		15	01	4.F.03		Release Control Actuator	0474
		15	01	2.C.10		Task Board Subsatellite	0474
						Release Control Actuator	
52	"Fly" Teleoperator and subsatellite away from parent spacecraft	02(30)	01	2.B.07	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.C.10		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
53	Release subsatellite from Teleoperator	02(30)	01	2.B.07	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.C.10		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	4.F.03		Teleoperator Manipulations Observer	0463

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-21
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment			MISSION MODE: A				
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
54	Equate Teleoperator subsatellite velocity to parent spacecraft velocity	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		02(30)	01	1.B		" " "	0445
		04(30)	01	2.B.07	-1	Spacecraft Relative Velocities Determiner	0475
		04(30)	01	2.C.10		Spacecraft Relative Velocities Determiner	0475
		04(30)	01	4.F.03		Spacecraft Relative Velocities Determiner	0475
		04(30)	01	1.B		Spacecraft Relative Velocities Determiner	0475
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	1.B		" " "	0446
		10(30)	01	3.M		" " "	0446
55	Conduct visual inspection of de- ployed subsatellite task board	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		10(30)	01	2.B.07	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.C.10		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M	-1	" " "	0446
		03(30)	01	2.C.10		Task Board Subsattellite Inspector	0476
		03(30)	01	4.F.03		" " " "	0476
		03(30)	01	2.B.07	-1	" " " "	0476
		03(30)	01	5.B		" " " "	0476

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				PAGE A-2.0-06-22
EXPERIMENT:							MISSION MODE: A
2.0 Functional Manipulation Experiment					BASIC FUNCTION: 06 Experiment Conduct		
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
56	Evaluate directivity of Teleoperator camera line of sight	10(30)	01	2.C.10	-1	Teleoperator Camera Controller	0477
		10(30)	01	2.B.07	-1	" " "	0477
		10(30)	01	4.F.03		" " "	0477
		10(30)	01	3.M		" " "	0477
		11	01	2.C.10	-1	Teleoperator Video Systems Evaluator	0466
		11	01	2.B.07	-1	Teleoperator Video Systems Evaluator	0466
		11	01	4.F.03		Teleoperator Video Systems Evaluator	0466
		11	01	3.M		Teleoperator Video Systems Evaluator	0466
57	Rendezvous Teleoperator to within 10 ft. of subsatellite	02(30)	01	2.C.10		Teleoperator Flight Observer	0445
		02(30)	01	2.B.07	-1	" " "	0445
		02(30)	01	4.F.03		" " "	0445
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
58	Identify docking points on deployed subsatellite	02(30)	01	4.F.03		Task Board Docking Point Identifier	0470
		02(30)	01	2.C.10	-1	Task Board Docking Point Identifier	0470
		02(30)	01	2.B.07	-1	Task Board Docking Point Identifier	0470
		02(30)	01	3.M		Task Board Docking Point Identifier	0470

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-23	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
59	Dock Teleoperator to subsatellite task board	02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		02(30)	01	3.M		" " "	0445
		02(30)	01	4.F.03	-1	Teleoperator Docking Observer	0455
		02(30)	01	2.C.10		" " "	0455
		02(30)	01	2.B.07		" " "	0455
		02(30)	01	3.M		" " "	0455
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
60	Stabilize motion of docked configuration	01(30)	01	2.C.10	-1	Teleoperator Stability Status Monitor	0478
		01(30)	01	2.B.07		Teleoperator Stability Status Monitor	0478
		01(30)	01	4.F.03		Teleoperator Stability Status Monitor	0478
		02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.07		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-24	
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
61	Optimize attitude of docked configuration	01(30)	01	4.F.03	-1	Teleoperator Attitude Status Monitor	0479
		01(30)	01	2.C.10		Teleoperator Attitude Status Monitor	0479
		01(30)	01	2.B.07		Teleoperator Attitude Status Monitor	0479
		02(30)	01	4.F.03	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.C.10		" " "	0445
		02(30)	01	2.B.07		" " "	0445
		10(30)	01	2.C.10		Teleoperator Flight Controller	0446
		10(30)	01	2.B.07	-1	" " "	0446
		10(30)	01	4.F.03	" " "	0446	
		10(30)	01	3.M	" " "	0446	
		10(30)	01	1.A	" " "	0446	
62	Reposition Teleoperator on sub-satellite task board	02(30)	01	2.C.10	-1	Teleoperator Undocking Observer	0480
		02(30)	01	2.B.07		" " "	0480
		02(30)	01	4.F.03		" " "	0480
		10(30)	01	2.C.10	-1	Teleoperator Flight Controller	0446
		10(30)	01	2.B.09		" " "	0446
		10(30)	01	4.F.03		" " "	0446
		10(30)	01	3.M		" " "	0446
		02(30)	01	2.C.10	-1	Teleoperator Flight Observer	0445
		02(30)	01	2.B.07		" " "	0445
		02(30)	01	4.F.03		" " "	0445
		02(30)	01	2.C.10		Teleoperator Docking Observer	0455
		02(30)	01	2.B.07	-1	" " "	0455
		02(30)	01	4.F.03	" " "	0455	

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-06-25	
DISCIPLINE: Technology		FPE/SUBGROUP: T-5 Teleoperations					
EXPERIMENT: 2.0 Functional Manipulation Experiment		MISSION MODE: A					
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
62	(Continued)	15(30)	01	2.B.07	-1	Teleoperator Docking Release Actuator	0481
		15(30)	01	2.C.10		Teleoperator Docking Release Actuator	0481
		15(30)	01	4.F.03		Teleoperator Docking Release Actuator	0481
63	Evaluate end effector grip strength	02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	4.F.03		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	4.F.03		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
		11	01	2.C.10		Teleoperator Manipulations Evaluator	0482
		11	01	2.B.07	-1	Teleoperator Manipulations Evaluator	0482
		11	01	3.M		Teleoperator Manipulations Evaluator	0482

FLIGHT EXPERIMENT TASK-SKILLS							SERIES T-5
							PAGE A-2.0-06-26
DISCIPLINE: Technology			FPE/SUBGROUP: T-5 Teleoperations				
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 06 Experiment Conduct	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER ENVIR NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
64	Replace test propulsion system components	02(30)	01	2.B.07	-1	Task Board Observer	0472
		02(30)	01	2.C.15		" " "	0472
		02(30)	01	2.B.07	-1	Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.10		Teleoperator Manipulations Observer	0463
		02(30)	01	2.C.15		Teleoperator Manipulations Observer	0463
		02(30)	01	3.M		Teleoperator Manipulations Observer	0463
		10(30)	01	2.B.07	-1	Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.10		Teleoperator Manipulations Controller	0464
		10(30)	01	2.C.15		Teleoperator Manipulations Controller	0464
		10(30)	01	3.M		Teleoperator Manipulations Controller	0464
65	Monitor Teleoperator Systems	01	01	2.C.10		Teleoperator Systems Monitor	0442
		01	01	3.M		" " "	0442
		01	01	2.B.07	-1	" " "	0442

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-09-1	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 09 Scheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.	TASK - SKILL		
NO.	DESCRIPTION				TITLE		NO.
7	Adjust Teleoperator spacecraft as required	08	01	2.C.10	Teleoperator Subsystem Adjustor		0460

FLIGHT EXPERIMENT TASK-SKILLS						SERIES T-5	
						PAGE A-2.0-10-1	
DISCIPLINE: Technology				FPE/SUBGROUP: T-5 Teleoperations			
EXPERIMENT: 2.0 Functional Manipulation Experiment						MISSION MODE: A	
						BASIC FUNCTION: 10 Unscheduled Maintenance	
CREW TASK STATEMENT		CREW FUNCT. NO.	OPER. ENVIR. NO.	DEPENDENCY NO.		TASK - SKILL	
NO.	DESCRIPTION					TITLE	NO.
6	Repair Teleoperator as required	03	01	2.C.10		Teleoperator System Inspector	0461
		07	01	2.C.10		Teleoperator System Fault Identifier	0462
		28	01	2.C.10		Teleoperator System Repairer	1393
7	Adjust Teleoperator as required	08	01	2.C.10		Teleoperator Subsystem Adjustor	0460